Montana Outdoors

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Montana Outdoors
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THE COVER: To many, arrival or departure of robins, swallows or other songbirds marks the changing seasons. However, most outdoorsmen associate the waterfowl species—ducks, geese and swans—with "The Mystery of Migration," an article by Bill Phippen beginning on page 2. The wood duck photograph on the front cover was taken by the late Danny On. The back cover photo of a cougar, a symbol of things wild, will be featured on the National Wildlife Week poster for 1979. The week runs from March 18-24 and is sponsored by the National Wildlife Federation.

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The Editor's Column

A recent letter from a reader prompted me to take an unusual tack with this column: to discuss the editorial policies of the magazine. Magazine editors don't typically do that, but then *Montana Outdoors* isn't a typical magazine. Our readers have always been a highly vocal bunch, which only goes to show they are deeply concerned about Montana's fish, wildlife and recreational resources. We appreciate that and wouldn't have it any other way.

The letter in question (see "Dear F&G") took us to task for being ". . . a soapbox for the environmentalists . . . [and] more of a textbook for environmentalists and politicians than . . . for the average Montana sportsman . . . ." Not surprisingly, we also hear comments expressing exactly the opposite point of view. For example, in a recent newsletter of the Montana Council of Trout Unlimited, *Montana Outdoors* was accused of being " . . . compromising and conciliatory . . . [and] patently intended to avoid controversy." Then too, we get letters from readers (God bless 'em) who tell us they like *Montana Outdoors* just the way it is!

I guess the point of all this is that the people who read our magazine are a diverse group with many interests, opinions and backgrounds. The one thing they all agree on is that Montana has a unique outdoor heritage which must be nurtured and protected. What they don't all agree on is which problems are most important, how they should be solved and what the role of the Department of Fish and Game (and *Montana Outdoors*) should be in helping to solve them.

Consequently, the *Montana Outdoors* staff spends a great deal of time wrestling with the problem of deciding what should go into the magazine. We can't cover everything we would like to in the six regular issues we publish each year, so we have to make some difficult choices. We do our best to provide a mixture of articles and photos in the hope that every reader will find something of interest in each issue.

How do we select the articles? First, we start with ideas. The ideas come from the magazine staff, readers, our advisory board and other Fish and Game employees. The magazine staff pools these ideas, and after discussing them with the advisory board, prepares editorial plans for at least a year in advance. These plans are flexible and subject to change as new ideas and problems arise, but they provide the basic framework for each issue of the magazine.

The *Montana Outdoors* advisory board consists of five regular members and an *ex officio* member, one from each division of the department. The idea behind this board is to have representation from a cross-section of department programs, and to tap the expertise of several resource management disciplines. Current members include: Gene Allen, administrator of the Wildlife Division; Don Hyyppa, assistant administrator of the Parks Division; Norm Peterson, habitat preservation coordinator for the Fisheries Division; Jim Posewitz, administrator of the Ecological Services Division, and Mel Wojcik, warden in the Law Enforcement Division. Vern Craig, chief of the Conservation Education Bureau in the Centralized Services Division, is the *ex officio* member.

Through periodic discussions, the editorial staff and board members eventually reach a consensus on which subjects will be covered in the magazine; editorial plans are then submitted to the department director for final approval. *The objective is to provide a balance that reflects various departmental responsibilities and satisfies the varied interests of our readership.*

We realize that many people turn to *Montana Outdoors* for relief from the problems and pressures of everyday life and like to read articles about outdoor activities illustrated with beautiful photographs of wildlife and Montana scenery. Hence, we try not to overload the magazine with articles about complex problems. But when fish, wildlife or recreational resources are threatened, we would be doing less than our job if we did not call them to your attention. When we carry an article on a controversial subject, we attempt to do it as objectively and factually as possible, so that you, the reader, can weigh the evidence and draw your own conclusions. Once again, balance is the key.

I realize we will never be able to satisfy all of our readers all of the time. We are constantly assessing and re-evaluating the scope and direction of *Montana Outdoors* in an effort to improve the magazine. We hope you will continue to send us your ideas, suggestions and criticisms, since your opinions constitute the best means we have of keeping in touch with Montana's sportsmen and recreationists.—*Dave Books*

The Mystery Of Migration

by Bill Phippen

I HEARD THEM in the 4 a.m. darkness, flying high to who knows where, following instinct into the face of a stiff March wind. Honkers! The shrill chords which had aroused me from my sleep were unmistakable. Goose talk filled the night, invaded the warmth of my room. It was everywhere. Eerie.

Stepping onto the slick back porch and craning my neck skyward, I searched through the damp coolness for the makers of all the clatter. For long moments, my ears recorded a drama my eyes could not share. Then, at last, up by a corner of the orange-slice moon, I saw them—the first telltale V's of the coming spring, strung out across a backdrop of hanging clouds like so many compass needles pointing north. Echoing the music of countless early springs, the migration back to the breeding grounds

photo: Jon Cates

once again had begun.

Although migration invariably takes place each spring and fall, the mystery of the phenomenon never fails to capture man's interest and imagination. Indeed, an explanation for its occurrence has piqued the human curiosity since the beginning of recorded time. For centuries, inhabitants of temperate lands were aware that certain types of birds were present in the summer but absent in the winter. However, the reasons they offered for such disappearances were as varied as the observers themselves. As early as 3,000 years ago, prominent naturalists such as Aristotle theorized that when songbirds dropped from sight with the advent of winter, they hibernated, perhaps underground or inside hollow trees. Even as late as the 18th century, followers of other schools of thought believed birds which vanished with cooler weather wintered beneath the mud of marshes, at the bottom of ponds or on the moon. The most common explanation for the birds' annual disappearance, however, was that they simply "moved away." Interestingly, this latter theory was not really so far off.

Although we know more about migration today than those early societies could have imagined, we still do not have a categorical explanation for the means by which certain animals can navigate hundreds of miles of open ocean to a secluded island beach or cross a continent to a spot thousands of miles from where their journey started. Like an effective cure for the common cold, complete understanding of all the causes and processes affecting migration still eludes modern man. continued

By definition, migration is any movement from one area to another; in the case of animal populations, such migration is generally in response to changing environmental conditions. Although many types of fauna—from large mammals such as elk and caribou to some of the most diminutive denizens of the sea—exhibit this characteristic, it is most often associated with birds. While most species of birds migrate in one way or another, some do not. Upland game birds, such as grouse, quail and pheasants, sometimes display seasonal movement patterns, but do not migrate in the true sense. Their muscle structure and physiology equip them for short, rapid hops of a few hundred yards, rather than for sustained flights of hundreds or thousands of miles.

Although many people mark the changing seasons by the arrival or departure of robins, swallows and other songbirds, it is perhaps the waterfowl species—the ducks, geese and swans—that most outdoorsmen associate with migration. Southbound flights of pintail and mallard ducks entice legions of waterfowl hunters to trade warm firesides for icy blinds, while skeins of Canada geese, following closely on the heels of retreating winter snows, have long been recognized as harbingers of the coming spring.

Ornithologists constantly debate how such migratory behavior evolved. Two theories, however, are more commonly accepted than others. One of these theories, usually referred to as the "northern ancestral home theory," suggests that at one time in their evolution, nonmigratory birds, sustained by a year-round food supply and suitable breeding conditions, swarmed over the entire Northern Hemisphere. When the ice ages came and the glacial ice fields from the north moved southward, the birds were forced into a highly concentrated area in the southern latitudes. As the ages passed, the glaciers gradually retreated and each spring, those birds whose ancestral home had been in the north tried to return, only to be driven back south again with the approach of each winter. Over time, the size of the ice-covered area diminished and the annual journeys northward became longer until, at last, today's climatic conditions were reached and with them the habit of migration.

"During migration, when they are not pushed by threatening weather, most ducks and geese fly between 40 and 50 miles per hour."

The other theory, in direct opposition to the one just discussed, supposes the ancestral home of all birds was in the tropics and that due to overpopulation, the birds constantly searched for new breeding grounds where competition for nesting space would be less intense. This theory, known as the "southern ancestral home theory," suggests that as these bird species strove for the more northern latitudes, they were stopped by glacial ice fields and had to retreat southward with the beginning of each winter. Eventually, as the glaciers receded, vast areas of previously inaccessible habitat became suitable for summer occupancy, while the winter habitat in the south remained the home to which the birds returned each fall. Thus, the pattern of migration was established.

The biological reason for waterfowl migration, as for migration of all birds, is survival. Most waterfowl would not survive if they did not migrate because many of them breed in areas where most of the open water freezes in winter, thus shutting off their food supply. On the other hand, space and food supplies are generally insufficient to accommodate all of the migrant visitors that eventually show up on the wintering grounds. Some theories hold that this regional inhospitality at different times of the year was the original impetus which dictated the need for movement from one region to another.

The extent of migration among species, and even within a single species, differs according to climatic conditions. In the northernmost parts of North America, almost all species that are fairly common during summer migrate to warmer climes with the onset of colder temperatures. However, certain resident waterfowl species of the tropics, such as the mottled duck of Texas's Gulf Coast and Florida, do not migrate seasonally at all.

The migration cycle for waterfowl, as for all migratory

F&G photo: Roger Fliger

birds, begins on the breeding grounds in the north. Ducks, geese and swans migrating through Montana commonly follow one of two widely recognized "waterfowl flyways" or migratory corridors: the Central Flyway, which encompasses most of the state's eastern plains, or the Pacific Flyway, in the mountainous west. Almost all of these birds have their breeding grounds in the prairie pothole regions of Saskatchewan and Alberta or in the arctic tundra-marsh areas of northern British Columbia, the Yukon and Alaska.

On the nesting grounds, waterfowl compete for a limited amount of available nesting space. Many biologists believe this competition has molded the intriguing characteristic of waterfowl to rear their young close to the spot where they themselves were reared. At first, some believed this homing ability was instinctive, but modern research has shown that, although the act of migration itself may be inherent, migration destinations and routes are learned. Also, studies have demonstrated that in its travels about a marsh, a duck or goose learns the locations of the various areas (such as feeding and resting spots) which satisfy its life requirements and the maze of routes connecting them.

Not long after the young of the year get their first feathers and some proficiency at flight, the fledglings begin to accumulate the subcutaneous (under the skin) fat reserves necessary to support the long, hard migratory flight ahead. In addition, the urge to move around intensifies, a premonition of the coming migration.

Although readily obvious, no one knows for sure what triggers this urge, known to scientists as "migratory restlessness." The most widely accepted explanation, however, is that a change in the physiological state of the birds takes place. Research indicates the timing of migration and the physiological changes in the birds which accompany it are most likely regulated by environmental changes as well as hormonal changes within the birds. Of the environmental factors, the length of night in comparison to day appears to be the key factor in triggering an interior timing mechanism in the birds. Increasing and decreasing amounts of light affect the pituitary gland, a gland which releases hormones that control the internal, biological clock of each species. Once this internal clock is activated by a change in day length, or "photoperiod," the clock needs to run the full circle of life's activities—courtship, breeding, molt, migration—before it can be reset.

Once enough fat has been stored to meet the energy requirements of extended migratory flight and the hormonal changes have taken place, the birds are

photo: Mike Crider

physiologically ready for migration. Normally, an adult migratory bird goes through these physiological changes twice a year, once before the journey to the nesting grounds and again before the journey away from them.

Reaching this physiologically "ready" condition appears to be only the first step toward the eventual initiation of migration in most species. What is needed to actually complete the process is an external stimulus, most likely some meteorological factor or a combination of factors such as a change in air temperature or the velocity and direction of the wind, or the passage of a cold front. Without such an external stimulus, migration, almost without exception, will not take place.

The timing of migration and the urge to leave hits different species at different times. Among ducks, it is commonly the flocks of blue-winged teal which first leave the breeding grounds, sometimes as early as August, to make their way southward. But most species are not as anxious as the teal to head south; for instance, mallards and scaup cling to their northern homes until almost frozen in by ice.

Among geese, the snow, blue and white-fronted species precede the mass movements of Canadas over the continent. In Montana, white-fronted and snow geese may arrive as early as October, but the large flights of Canada geese rarely show up before November.

Weather can have a substantial effect on the timing of waterfowl migration; yet, no simple relationship exists between weather and the initiation of such flights. In general, changes in air temperature and barometric pressure are probably the principal factors in starting migration, while wind direction and air flow are critical in regulating migratory movements.

Studies in the United States and Canada have shown that migratory movements in spring begin at the onset of warm fronts, when the barometric pressure is dropping and when warm, moist air from the tropics is flowing up from the south. With passage of each warm front, migration proceeds in full force. With approach of a cold front, however, bird movements usually slow down; when the cold front actually arrives, movements northward cease and do not begin again until the front has passed.

". . . Modern research has shown that, although the act of migration itself may be inherent, migration destinations and routes are learned."

In a similar fashion, southward movements in the fall start when the first cold fronts blow through and when a continuous flow of polar air begins to dominate the weather. Movements thereafter proceed at full tilt until warm fronts are met; migration resumes speed when the warm fronts have moved on. Most movements take place

when the wind is favorable—blowing in the direction of flight—and after migrants have been hampered for extended periods by fog, rain or strong head winds.

The speed at which migration takes place varies with the different waterfowl species and with weather. Unless held up by unsuitable weather, once fall migrations are initiated, they proceed at a fairly regular, although leisurely, rate. As a rule, fall migrations are more prolonged than spring movements because slight variations in weather conditions—such as warm, Indian summer weather—may cause transient waterfowl populations to linger in one spot.

"Weather can have a substantial effect on the timing of waterfowl migration; yet, no simple relationship exists between weather and the initiation of such flights."

Occasionally, because of the triggering effect of extremely low temperatures within a strong flow of arctic air, fall migrations can be spectacularly swift. In one case, thousands of ducks journeyed from the Great Plains of central Canada to the southern, coastal marshes of Louisiana—a distance of about 1,600 miles—in as little as 40 hours.

In spring, most waterfowl species wait in their winter homes until conditions are favorable and then move rapidly to the breeding grounds. One exception is the Canada goose, which follows a more leisurely schedule in returning to the breeding grounds than most other species, advancing northward with the day-by-day retreat of freezing temperatures.

Migration distances vary greatly among species. Although most waterfowl species migrate long distances to find suitable winter homes, populations of some species do not migrate at all, and some individuals of certain species, even in the coldest areas, migrate as short a distance as possible to find open water and food. Examples are the arctic-breeding sea ducks—the eiders, scaups and goldeneyes—which travel only as far as the nearest spot at which the sea remains open during winter. On the other hand, blue-winged teal, which seem to be unusually sensitive to cold weather and tend to migrate farther than any other North American duck species, may migrate all the way from the northernmost portions of Canada to Chile and Argentina.

During migration, when they are not pushed by threatening weather, most ducks and geese fly between 40 and 50 miles per hour. However, when frightened or pushed, some duck species have topped 60 miles per hour. There are several cases from World War I of ducks passing airplanes that were bucking head winds at 55 miles per hour.

Altitudes reached during migration vary among species and are affected by changing environmental conditions. But some generalizations can be made: The presence or absence of cloud cover may determine the altitude chosen by birds; waterfowl, which migrate both by day and night, fly higher by night than by day; birds fly higher over land than sea; seasonal variations occur in migration altitudes, probably because of the direction of prevailing winds at higher altitudes (experiments indicate migrating waterfowl fly higher in the fall).

One of the most hotly debated questions concerning migration is the means by which birds navigate over long distances. Some people theorize that birds simply have a "sixth sense" which tells them where they are going. More scientific explanations suggest they possess an innate "magnetic orientation." By whatever means they navigate, studies have shown that migration often is disrupted by heavy fog or a heavily overcast sky. When attempting to fly through heavy fog, waterfowl can become completely disoriented and sometimes even fly to their deaths. Most authorities agree that probably a combination of abilities—the ability to recognize familiar landscapes, the ability to become celestially oriented by sun and stars and the ability to make visual reference to such environmental features as ocean swells and waves—leads them to their final destination. Whether man will ever completely understand the process is a matter for speculation.

Although it seems scientists now know a great deal about migration and the causes and processes which affect it, nothing could be further from the truth. Ornithologists studying migration strongly believe in those two premises basic to all biological research: to "never say always" and to "never say never." For instance, even though almost all birds migrate in a north-south fashion, some species do not. Also, although most species migrate when temperatures drop and food supplies begin to dwindle, others migrate when the opposite conditions occur. Even within a single species, some populations migrate while others do not and some individuals of a population migrate while others stay behind.

If any generalizations about migration can be made, they are: (1) Mass movements of large flocks of ducks and geese traveling at the same time and in the same direction are annual events; (2) the basic direction of these mass flights is unchanging from year to year; (3) adults and young of the year fly together in these movements, and (4) migratory behavior is dynamic, changing with the weather and availability of food.

Man's fascination with migration, particularly waterfowl migration, is drawn from its mysterious, inexplicable nature. Because the phenomenon's origin has been obscured down through the millennia and because all the fundamentals and intricacies of the event have been so elusive, migration may always remain an unsolved mystery.

Yet, since curiosity is part of him, man cannot help but search for answers to the where's and why's of this little-understood mystery. Indeed, he has been seeking its unraveling for almost as long as the event has been taking place. So, in the waning darkness of that March dawn when you, too, hear those first unmistakable chords above the steady cadence of a melting winter, follow your instincts and seek out the source of that nighttime clamor. After all, it's only natural. ■

Plenty Coups State Monument

To All The Children Of Our Great White Father

by Harley Sorrells

"No red man has ever been shown so many honors as have I . . . Today I, who have been called Chief of Chiefs among red men, present to all the children of our Great White Father, this land where the snows of many winters have fallen . . . ."
(excerpt from Chief Plenty Coups' dedication speech)

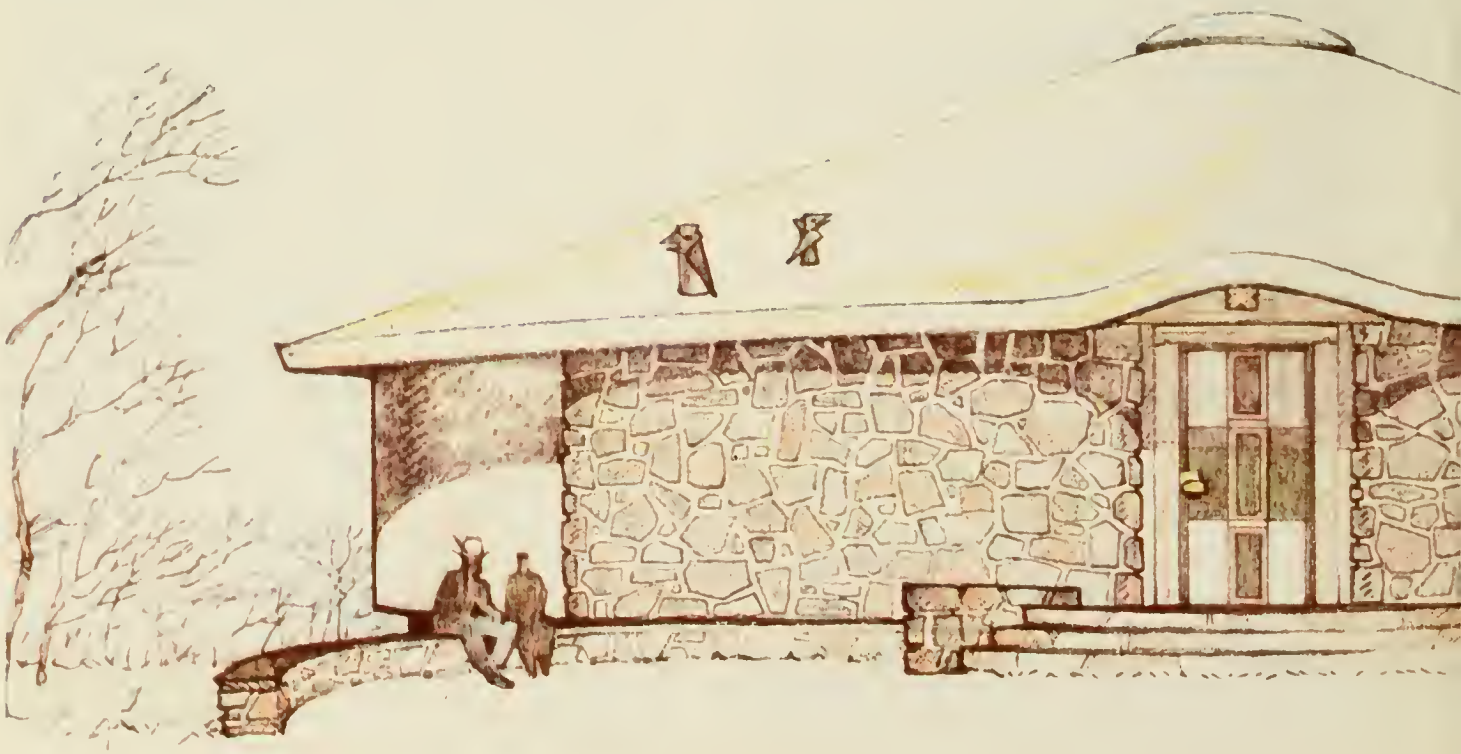
* * * * *

For many years, it had been the dream of Chief Plenty Coups to present to all people a lasting memorial to the Crow tribe. The chief decided to present 40 acres of his land as a "Nation's Park," to be maintained by proceeds from sale of an additional 150 acres. In an elaborate ceremony conducted at his home near Pryor, Mont. in 1928, Chief Plenty Coups of the Crow deeded his land to the U.S. government for exactly that purpose.

(For more information about Chief Plenty Coups, see Ron Holliday's article, "Aleck-chea-ahoosh," in the Nov./Dec. 1971 *Montana Outdoors*. Translated into English, "Aleck-chea-ahoosh" means "Many Achievements," or, in the language of the day, "Plenty Coups." Coups were acts of bravery; so, as his name suggests, Plenty Coups was a great warrior with more than 100 coups to his credit.)

When Plenty Coups joined his brothers in "the Beyond Country" in 1932 at the age of 84, he left, in addition to his land, many personal items of historic and cultural importance. Among his belongings were many letters from friends and politicians, hundreds of old photographs, sacred medicine bundles and numerous items reminiscent of the old days. Most of these items were stored until the early 1950s when the Billings Kiwanis Club opened one room in the chief's house as a museum. Although this was a popular attraction for area visitors, security of the collection was in jeopardy, so the memorabilia were once again stored until adequate display facilities could be provided.

The area dedicated by Chief Plenty Coups is now classified as a state monument and has been administered by the Parks Division of the Montana Department of Fish and Game since 1965. Situated within the western boundary of the Crow Indian Reservation in south central Montana, about 35 miles south of Billings, the Chief Plenty Coups State Monument represents an effort to preserve one of the state's significant historic sites. Plenty Coups' log home and store remain as evidence of the chief's efforts to adopt a new lifestyle. As is the case with most historically significant sites, the Plenty Coups project warranted special planning and attention. A major concern was to have the area function as a recreation area or park as the chief had wished. This was not easy because the site had been neglected



for over 30 years.

With the aid of local residents, the area was cleaned up, reclaimed and a portion of the land developed as a picnic site. Situated along Pryor Creek, the day-use area today offers excellent picnicking, with tables, grills, sanitary facilities and drinking water. Time and effort transformed the area into a beautiful, well-managed recreation site.

After initial development of the grounds area, use rose steadily. Comments by visitors and the need to fulfill a responsibility made it evident the next task was an interpretive center or museum building to display the items left by Plenty Coups. Such a facility would not only offer display areas, but also provide a means of preservation and protection.

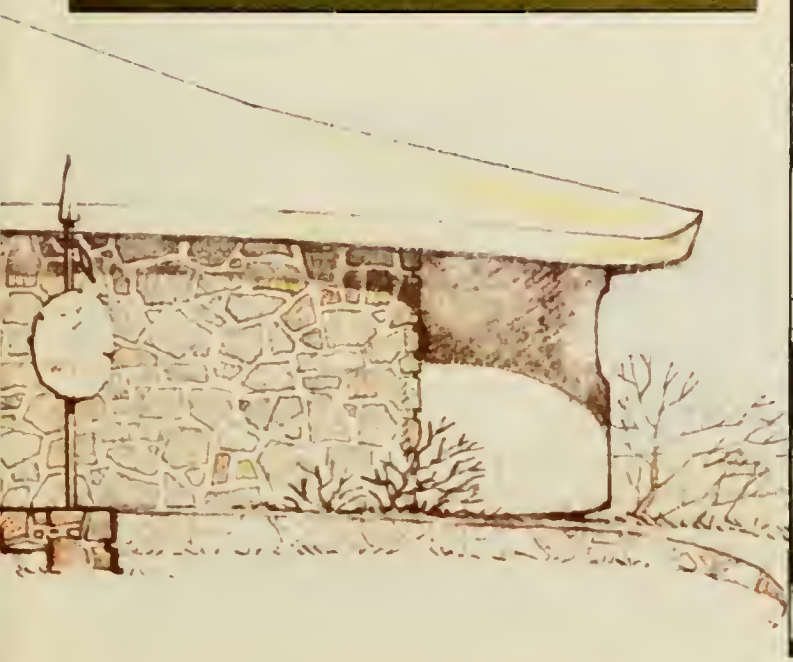
A private donation by Hardin rancher Ed Kopac got the project rolling. Coupled with tribal and state funds, Kopac's donation made it possible to begin construction of a new facility in July 1971. Major construction was completed by late spring of the following year.

The museum is a low, circular structure with 12 sides. This architectural design was selected both for visual effect and to conceptualize the native American's use of the circle and its representation of order in the universe. This basic shape is used throughout the museum (even the display panels are constructed on a radius). A full basement supplies storage and work areas. Archival materials are secured in a centrally located vault and steel doors protect the personal items left by Plenty Coups.

The Montana Department of Fish and Game had ventured into a completely new management area. Although the Parks Division manages other historic sites which warrant equal consideration, the Plenty Coups State Monument is the only site which incorporates use of a museum.

The focus of the Plenty Coups Museum is interpretation of Crow culture and history as reflected by the life and deeds of Plenty Coups. Keeping in mind Plenty Coups' wish not to have the area honor him but to honor his children, the Crow people, display plans give both equal attention.

It was decided a miscellaneous display arrangement was of little educational value; therefore, an interpretive display or exhibit approach was selected. This new



Billings architect Eugene Padanyi-Gulyas' rendition of Chief Plenty Coups Museum (bottom left). Still standing at the site of the monument is the home (left) of Plenty Coups (F&G photo: Harley Sorrells). Chief Plenty Coups (below) dedicating the park in 1928 to the U.S. Government, represented by General Harbord.

display style also lent itself to the few, but varied, materials available for display.

The museum's displays were developed with minimal use of ethnographical items, or those specific to the Crow culture. Some ethnographical items are not represented in the collection at all, while other items are abundant. For example, the chief left 14 medicine bundles but no shield, buckskin shirt or bonnet, all of which played an important role in the life of the Plains Indian. Most displays are designed to be changed periodically and eventually the public will have viewed all the pieces left by Plenty Coups, plus many other Crow items.

The Crow Culture Committee and an advisory board assisted in development of six interpretive panels representing highlights of Plenty Coups' life, thus attaining three goals: (1) The displays give insight into the life of a Plains Indian who lived through the transition from nomadic hunter to the confines of reservation life and acculturation (learning and accepting the white man's ways necessary for Indian survival in a new environment); (2) they reveal cultural manifestations of the Crow, and (3) they emphasize Plenty Coups' role as a political leader, the endeavor for which he is probably best known.

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The circular shape of the Plenty Coups Museum eliminates wasted corner space typical of most museums. The floor plan of the display area is arranged as a circle within a circle. The inside of the center circle is made up of the six "Plenty Coups" panels, while the outside of the center circle contains three display cases and three gallery areas. One of the cases tells the story of how the chief came to have a flag bearing his name while another case duplicates the chief's private room in his log home. A third display describes horse accouterments. The text incorporates both English and Crow words and represents the first of the museum's bilingual displays. Gallery areas display paintings and drawings dealing with Crow culture, many of which were executed by Crow artisans.

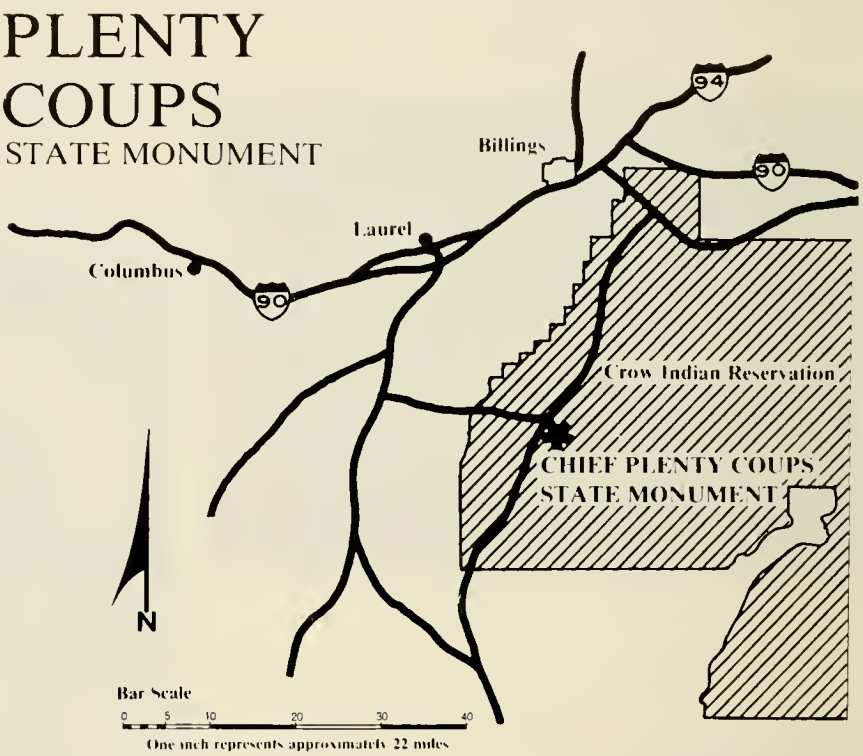
Against the outside wall of the museum, on the outer circle, there are seven more display areas. Through chronological displays, the visitor learns about the tribe's prehistory, religious societies and warriors, continuing through to reservation times, both in the past and now. The prehistory panel utilizes a five-minute film and artifacts to interpret this portion of the Crow tribe's past. A 12-foot diorama, complete with narration, provides information about the prehorse days of the tribe.

The last interpretive area in this series affords a view of the Pryor Mountains to the south. While looking through the museum's only window (a circle), the visitor may listen to a recorded message about the Pryors and their role in Crow religious ceremonies.

The Parks Division has developed a master plan for the Chief Plenty Coups State Monument and future improvements will include extended day-use areas, nature trails, outdoor interpretive stations and children's play areas. As development proceeds, historic features of the monument will mesh with other places of historic interest in the Pryor and Bighorn mountains. The Plenty Coups Museum will function both as a visitor center and as a repository for archival and research materials dealing with the Crow.

The Chief Plenty Coups State Monument is unusual in many ways and unique in recreational potential and educational value. The area combines many experiences the recreationist searches for on a day's outing.

Plenty Coups left his land and belongings for the enjoyment of all people and today the Montana Department of Fish and Game maintains the area with that wish in mind. So, may we extend an invitation to all, as Plenty Coups did many times decades ago, "Welcome to the home of Plenty Coups." ■



The Catchall

Toward a Better Understanding

Most outdoors-minded people will agree that Montana has a lot to offer. From one corner of the state to the other, the scenery, wildlife, hunting, fishing and other forms of recreation are much sought after and enjoyed by scores of residents and visitors.

But, as many hunters can tell you, "times have changed," and the outdoor scene isn't as rosy as it was a few years back. In fact, a great deal of the private land in the state became unavailable to hunters—closed to access, "locked up" or whatever you want to call it. The sad fact is that access restrictions had reached the "crisis" stage—to the point where, for example, over one-half of the privately controlled land in eastern Montana was identified as closed to access for mule deer hunting in 1975.

Recognizing this as the department's No. 1 problem, Robert F. Wambach began his term as director with a firm commitment to the task at hand. He knew the department was a forerunner in attempting to preserve wildlife habitat, but he also understood the futility of such efforts if people could not use and enjoy the resource.

After several "brainstorming sessions" with department staff, he decided to ask for outside help in attempting to resolve landowner/recreationist conflicts and resulting increases in the amount of private land closed to access for hunting, fishing and other recreation. In late December 1977, Wambach, with the approval of Gov. Thomas L. Judge, created the Landowner Relations/ Sportsmen Access Advisory Council. The council, which by law can exist no longer than two years, will function until Nov. 30, 1979.

The official purpose of the council is, "to advise and assist the Montana Department of Fish and Game and the Fish and Game Commission with establishment of a program designed to improve relations between sportsmen and landowners and attempt to resolve the problems related to the closure of private and public lands to access by sportsmen." Simply stated, the council is trying to assist the department and sportsmen in finding ways out of a very serious predicament—the rapid loss of places to hunt and fish.

Council members include:

Ken Fitzpatrick, chairman, a Butte sportsman and businessman who owns and operates an irrigation equipment sales and service store

John Gilpatrick, vice chairman, a rancher from Hilger

Jack Galt, a state senator and rancher from Martinsdale

William Day, a state representative and rancher from Glendive

Don Bailey, a rancher from south of Forsyth

Don Hartmann, a rancher from southeast of Miles City

Floyd Kimmel, a sportsman and contractor from Billings

John Poston, a sportsman and lawyer from Helena

S. J. Seidensticker, a rancher from Twin Bridges

Joe Klabunde, Havre, chairman of the Montana Fish and Game Commission

Joe Etchart, a rancher from Glasgow

J. E. Taplin, a sportsman and retired Burlington Northern, Inc. employee from Dayton

Stan Boone, a rancher from Darby.

Council members come from various places and they represent a variety of interests and backgrounds. However, after six meetings, one common characteristic is obvious: All possess a sincere and dedicated desire to seek realistic, long-term solutions to landowner/recreationist conflicts.

The council has taken a close look at various aspects of the department's operations as they relate to the access problem and interactions between the department, sportsmen, landowners and the public. Members have met with many groups and individuals to gain a better understanding of the problem and to seek ideas and solutions.

A brief summary of council concerns and recommendations follows:

(1) **Enforcement authority for department employees**—Landowners and sportsmen throughout the state commonly mention the need for additional field enforcement work by the department, particularly during hunting seasons, to help reduce property damage and vandalism on private property. These same people generally oppose any growth in the total number of department employees. Recognizing this, the council recommended giving biologists and other appropriate personnel full authority to enforce fish and game and other laws, the same as department game wardens. The Fish and Game Commission concurred, and the department initiated a warden training program in August 1978 for nonenforcement personnel. During two separate five-day training sessions, 98 department employees completed the training as *ex officio* game wardens in preparation for the 1978 hunting season. This effort met with considerable success as measured in terms of acceptance by sportsmen and landowners.

(2) **A toll-free telephone number for reporting violations**—A primary reason

The Landowner Relations/Sportsmen Access Advisory Council

recycled paper

for landowner intolerance of sportsmen, and resulting increases in access restrictions to and across private lands, is property damage. Recognizing the need to minimize such damage—and also that sportsmen must help in self-policing efforts—the council recommended establishing a toll-free telephone number for use in reporting such damage. The toll-free number (1-800-332-6117) was set up and functioned around the clock during the 1978 hunting seasons. Success of this program, in terms of calls received related to landowner problems with trespass, property damage, vandalism, etc., was much greater than anticipated. As a result, the department is continuing this program as a year-round effort.

(3) **Need for self-policing efforts by sportsmen**—Misconduct and disrespect by a small minority of hunters is a primary reason for landowner/sportsman problems and resulting increases in the amount of private land closed to access. Just before the start of the 1978 hunting seasons, the council passed a recommendation urging sportsmen "to clean up their act." The recommendation stated that responsible hunters must help police their own ranks and isolate those who care nothing about the future of hunting and fishing in Montana. The recommendation went on to encourage the use of "peer pressure"—outspoken disapproval by other outdoorsmen—as a strong deterrent to misconduct outdoors. Sportsmen were encouraged to use the toll-free telephone number as one means of self-policing, and the recommendation was sent to all agricultural and sportsmen's groups in the state.

(4) **Department information efforts**—The council spent considerable time discussing the department's information efforts as they relate to landowner/recreationist relations and the department's image. Such things as the department's hunter safety program, news program, department films and television spots, the exhibit trailer, youth education and other aspects of the information program were scrutinized by the council, and its recommendations were given to the director.

(5) **Property damage reimbursement proposal**—Again recognizing damage to private property as a primary reason for landowner/recreationist problems and private land access restrictions, the council designed a program to reimburse landowners for such damages. Considerable effort was devoted to this proposal throughout the past year and at this writing, it is under consideration by the Montana Legislature.

Basically, the proposal establishes a $2 mandatory fee to be paid by hunting and fishing license buyers, with the money earmarked for damage reimbursement. Claims from affected landowners would be investigated by department field personnel and, if found to be legitimate, payments would be made from the fund according to an established schedule of limitations.

Another feature of the proposal is a "self-destruct" provision whereby the program would end in four years unless renewed by the legislature. If the program were terminated, surplus money remaining in the fund would be earmarked for purchase of hunting and fishing access.

(6) **Landowner incentives**—Private landowners provide wildlife habitat and they allow access for hunting, fishing and other outdoor recreation, but they receive nothing in return. Wildlife habitat definitely has a public value; recognizing this, the council is investigating some method of providing an incentive for landowners who develop and/or maintain wildlife habitat and allow public access.

(7) **Big game depredations on private property**—During a tough winter, big game depredations on privately owned property and haystacks can be a serious problem, particularly with high hay prices. The department is currently helping landowners by providing fencing materials and assisting with actual fencing, by herding problem animals and by establishing special seasons when necessary. However, this effort by the department is not resolving the problem for some landowners and the council is investigating other alternatives.

(8) **Hunting by permission signs and landowner permission booklets**—These materials were available in the past, but received little use. As a result of council emphasis, various types of permission signs and the landowner permission booklets were redesigned and advertised statewide before and during the 1978

Moving?

If you're planning to move in the near future, please attach the label from your last issue and send it and your new address to *Montana Outdoors,* Dept. of Fish and Game; Helena, MT 59601.

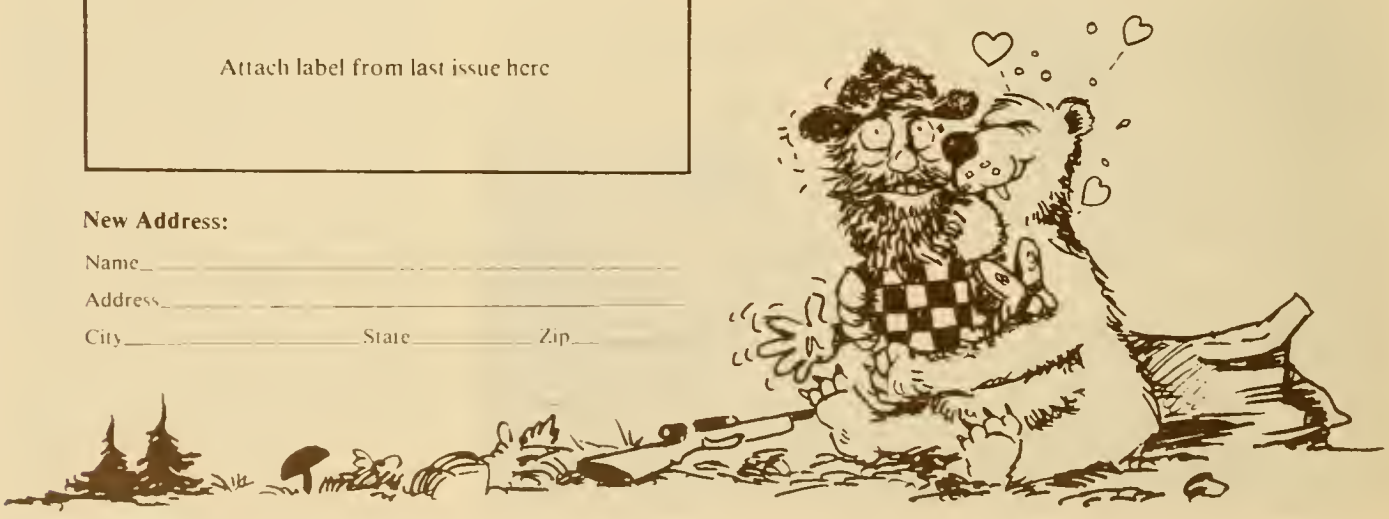
Attach label from last issue here

New Address:

Name_____

Address_____

City_____ State_____ Zip____



hunting seasons. These materials are available free from the department. The program worked well during 1978.

(9) **Department licensing system**—The department's licensing system is complicated and creates problems related to wildlife management and distribution of hunting pressure. The council is examining the system and needed changes as they relate to landowner/sportsman problems. The department is also working on extensive revisions in the licensing system.

(10) **Trespass**—Trespass by hunters on private property has been identified as a primary problem commonly mentioned by landowners. The council, after looking at the various trespass laws and their enforcement, has suggested a more concise law, stiffer penalties and better enforcement.

(11) **Access to federal lands**—Access to federal lands is difficult in many parts of the state due to a "checkerboard" ownership pattern, or surrounding private lands. The council met with representatives of both the Forest Service and Bureau of Land Management about these problems. After listening to a firsthand explanation of the various programs, the council believes these agencies are making a definite effort to resolve access problems. The council encouraged the Department of Fish and Game to cooperate whenever possible in such efforts.

(12) **Access to state lands**—This topic was discussed at several council meetings. As a result of the lease arrangement on state lands whereby the lessee controls access, the council believes the issue of access to state lands will be resolved if and when the private land access question is overcome.

The advisory council has made a great deal of progress in attempting to design workable solutions to landowner/recreationist problems. Council recommendations have not been agreeable to everyone, but we must all recognize this issue has no easy solutions.

Council members will continue to seek ways in which landowners and sportsmen can help each other toward a better understanding. Hopefully, you—as a Montana recreationist—will actively participate in this effort. Because when everything is said and done, it will still boil down to *how you treat the landowner*. The council encourages you to contribute your ideas toward development of realistic solutions. But above all, treat the landowner with the respect he deserves—in the interest of a better tomorrow for all of us who enjoy and use Montana's unique outdoors.—*Steve Bayless, special projects coordinator*

Three Birds Missed On 1977 Count

Three additional birds should have been added to the list of species observed in Montana during the Christmas count through 1977. (See "Christmas Bird Count: A Holiday Tradition" in the Jan./Feb. 1979 *Montana Outdoors*, pages 20-22.) The rose-breasted grosbeak seen on the Ennis count and the sage sparrow and gray-headed junco reported on the Miles City count were inadvertently excluded. This brings the total of different bird species observed on 263 Christmas counts over 64 years (through 1977) to 170 species.

Three additional birds were reported from the 1978 count: the European widgeon, barred owl and black-legged Kittiwake. These three species must await review by the Christmas counts regional editors before they can be officially accepted.—*Mike Aderhold*

"A Question of Trapping"

"What are your views on trapping?" asked the department's information officer for the Missoula region, Bill Thomas, at a recent meeting. The responses he received ranged from a blunt, "I think it stinks," to "Why not harvest a renewable resource? Trapping just makes good sense."

These and the feelings of other Montanans concerned about the issue of trapping are presented in a 10-minute program, "A Question of Trapping." The increased efforts of the department's management program for furbearers are also discussed in the program. The slide presentation, accompanied by a synchronized tape-recorded sound track, is designed to encourage discussion of trapping.

Prepared for civic and school groups, the program is available free from the Film Center, Department of Fish and Game, 930 Custer Ave. W.; Helena, MT 59601 (406-449-2426).

Parks Fees to Increase

Overnight camping fees assessed at some state park system sites will be increased beginning this spring, as will guided tour fees at Lewis and Clark Caverns.

The increases were approved by the Fish and Game Commission in an effort to meet the rising cost of services at the sites. *Camping fees have not changed since their inception in 1969; tour fees at Lewis and Clark Caverns have not been raised since 1946.* The increase will not make the sites self-supporting, but with the new fee schedule users will be paying a more equitable share of operation costs. (The balance of the financial support for the park system comes from a variety of sources. See "Turning Money into Management: Financing State Parks" in the Special Parks Issue of *Montana Outdoors.*)

Overnight camping fees have been increased by $1. The new charge at sites with minimal services and facilities is $2 per night and at more highly developed sites, $3 per night. The fee admits one vehicle and its occupants. Group rates

Wildlife Shorts

To date, over 30,000 unicellular (one-celled) animals have been found, but this is a small part of the 882,000 animals known to man. Several members of this unicellular group are large enough to be seen with the unaided eye.

* * * * *

The sphinx moth looks like a hummingbird in flight. It has the unmothlike habit of flying freely in the bright sunlight and when it hovers at flowers, it closely resembles the hummingbird. It is also called "hawk moth" or "hummingbird moth."

* * * * *

The starfish uses a unique method called "autonomy" to escape from danger. If the starfish is held firmly by one of its arms for several hours, it will free itself by shedding this arm. In time, it will regenerate the lost appendage. This method of escape is also used by some crustaceans and various long-tailed lizards.

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Horned toads are actually lizards. This places them in the reptile category, not amphibian, so they have no need to return to water for reproduction.

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Sensitivity to radiant heat appears to be developed highly in mosquitoes and other blood-sucking insects. That is why they can find their targets so easily.—*Vince Yannone*

are available under certain conditions and are assessed at the rate of "one fee" per six people.

Fees are not collected at all state park system sites—only those marked as fee areas. Campers may purchase the necessary overnight permit from the attendant at the site, from Fish and Game regional offices or at the Helena headquarters.

The charge for seasonal camping permits has been raised from $10 to $20. This permit is a decal which is affixed to a vehicle; it admits the vehicle and its occupants to fee areas. Seasonal permits are available at Fish and Game regional offices and in Helena. *Beginning this spring, seasonal camping permits are available to Montana residents only.* Nonresidents must purchase overnight permits to camp in fee areas. (Residency is defined in section 26-202.3 of the "Revised Codes of Montana," which also define residency for the purpose of obtaining fishing and hunting licenses.)

The department also offers a resident senior citizen's "Golden Years Pass." It is available to Montanans age 65 and older. This pass is also a decal which is affixed to a vehicle. It admits the vehicle and its occupants to fee areas (providing the senior citizen owner is in the vehicle). The Golden Years Pass costs $1 and is valid for the life of the purchaser. The cost remains unchanged.

No fee is charged for day use at any of the system sites. However, where special group facilities are available by reservation, fees may be assessed. Only one such area now exists, the Chalet group day use area at Canyon Ferry. It is proving so popular and functional that the concept may be expanded to other sites in the system. The amount to be charged groups for use of the Chalet site was still under study by the department when this magazine went to press. In addition, a deposit is required; it is refundable if groups leave the area in good condition. To reserve the Chalet site for group day use, call the Parks Division in Helena (406-449-3750).

The charge for the guided tour through Lewis and Clark Caverns is now $2 (formerly $1) for "adults age 13 years and older", $1 (formerly 50 cents) for children 6 years and older and no charge for children under 6. The new special group rate is $1 per person (formerly 50 cents). Under specified conditions, groups such as schools, clubs, churches, etc. may qualify for the group rate. Family "groups" are not eligible. Details are available from the cavern manager, P.O. Box 1024, Three Forks, MT 59732 (406-285-3694 or 406-287-3541) or from the Parks Division in Helena.—*Don Hyyppa*

Hamilton Artist Wins Bird Stamp Contest

John Marion, an artist from Hamilton, Mont., has won the Department of Fish and Game's first annual bird stamp art contest with a watercolor painting of five snow geese in flight. His work will appear on the 1979 bird stamp, which will be available after May 1.

A native of Nashville, Tenn., Marion has lived in Hamilton for the past three years. He is married and has two teenagers who attend Hamilton High School. He began his career as a commercial artist and later became a partner in an advertising agency. Since moving to Montana, he has concentrated strictly on painting, primarily with watercolors. Most of Marion's work is displayed at Marie's Art-eries, a Missoula gallery.

Marion's painting was chosen from 36 entries by a panel of three judges: Dr. Robert Eng, coordinator of the wildlife curriculum at Montana State University, Bozeman; Harold Ruth, a collector of antiques and art and gallery owner from Billings, and Elizabeth Rak, the director of Anaconda's community art gallery and museum.

Montana's bird hunting license has been in the form of a stamp since 1969, but 1978 was the first year the stamp featured full-color art. Art work on the 1978 stamp, which featured sage grouse in their native habitat, was painted by Marlowe Urdahl, a Bozeman artist. Urdahl has a degree in commercial art from Montana State University and has received a number of awards for his work.

In addition to sale as a license, Montana's bird stamp is available to collectors throughout the license year for the face value of the license ($4 for the resident stamp, $2 for the youth stamp and $30 for the nonresident stamp). Only one bird license may be purchased by an individual during the license year, but any number of stamps may be purchased if the license numbers are first detached. This renders the stamps invalid as hunting licenses.

When stamps become outdated at the end of the license year (April 30), they are available with license numbers intact. Collectors may purchase them at face value in quantities of up to 100 for each type at the Fish and Game office in Helena.

Future bird stamp designs will also display art selected through competition among Montana artists. Rules for next year's contest will be available from department offices in Helena, or from regional headquarters in Kalispell, Missoula, Bozeman, Great Falls, Billings, Glasgow and Miles City.

The Knotty Issue of Wildlife Jurisdiction

by Mike Aderhold
illustrations by Kelly Vollrath

THE REGULATION OF WILDLIFE has a long and colorful history. Governments, laws and politics have been involved with wildlife for over 2,000 years. In the early days of the Roman Empire, wild animals in their natural state were considered like the air and the oceans —they were the property of no one. Later, Roman law held that the private landowner had exclusive right to reduce wildlife to private possession on his property.

Early European conquerors, in an attempt to keep weapons out of the hands of those they conquered, prohibited general hunting. The conquerors reserved this right for themselves. In medieval England, land was parceled out to the nobility. Unallotted lands were known as "royal forest," and the king alone could hunt them. During the Norman conquest of England (1066), there was an expansion of these "forests" and an elaborate system of forest law evolved. Eventually, the king claimed exclusive authority to hunt anywhere in the kingdom and a system of exceptions developed for a privileged few.

As England's political system evolved, so did its system of wildlife regulation. In time, most of the king's power over wildlife was given to a Parliament, but together they retained complete authority to determine what rights others might have with respect to wildlife.

This pattern was brought to what became the United States and vestiges remained after Americans declared their independence. In 1842, the U.S. Supreme Court ruled, in a case involving a New Jersey landowner's claim to oysters in mud flats adjacent to his land, that powers of the crown and Parliament became vested in the state when the people of New Jersey took the reins of government. The oysters belonged to the state, and a tradition of state ownership and jurisdiction over wildlife was built on this precedent. In a number of subsequent early Supreme Court decisions involving shellfish and off-shore fishing, the eastern states reinforced what appeared to be a right to control and regulate game. This "right" was to be exercised as a trust for the benefit of the residents of the respective states.

What the states ignored in the 1842 Supreme Court case was an important qualifier which said that powers assumed by the states were ". . . subject . . . to the rights . . . surrendered by the Constitution to the general government. . . ."

In 1900, at the invitation of several states, the federal government got into the wildlife regulation business with passage of the Lacey Act. The invitation emerged after a number of wildlife problems surfaced that states individually could not solve. The foremost problem was control of interstate marketing of game. The Lacey Act enlisted aid of the federal government's constitutional authority to control interstate commerce and made it illegal to transport illegally killed wild animals across state lines. Another section of the act prohibited importation of animals injurious to agriculture, such as the then-established starling and English sparrow. Because of declining passenger pigeon populations, the law also authorized federal measures to preserve, distribute, introduce and restore certain wild birds, subject to laws of the various states.

continued

The federal government was in the wildlife business to stay. In the 79 years since the Lacey Act, the federal government has developed an impressive body of wildlife law and a growing interest and participation in wildlife management. This movement is at least partially responsible for both the improved position of wildlife and also the jurisdictional friction between the federal government and the states in our country today. Growing federal involvement and the consequent loss of local control have been points of state concern for more than 50 years.

THE FEDERAL VIEWPOINT

The authority behind all government regulation is the U.S. Constitution. In very general language, this document enumerates the powers and duties of the federal government. Federal wildlife regulations have developed, for the most part, under three constitutional provisions: (1) the authority to make treaties, (2) the authority to protect federal property and (3) the authority to regulate national commerce.

Around the turn of this century, waterfowl and shore bird populations had fallen to all-time lows. State laws at the time were insufficient to protect these species. After several attempts, Congress in 1913 passed a federal migratory bird law. Opposed by market hunting interests, spring duck hunters and some states, the law was almost immediately challenged and its legal support found wanting.

In a masterful legal and political maneuver, conservation interests employed the treaty-making provisions of the Constitution and got Congress to authorize the president to enter into international treaties to protect migratory birds. In 1916, the United States signed such a treaty with Great Britain (signing for Canada). Congress passed the enabling legislation and a new Migratory Bird Act (1918).

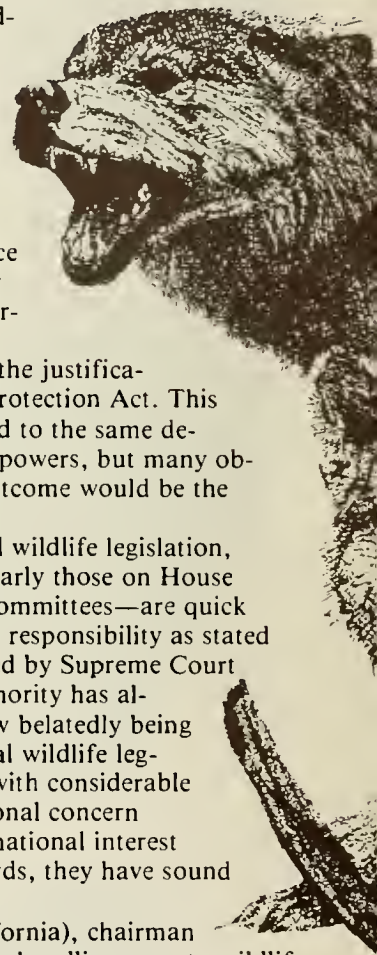
The act was again challenged. This time, the Supreme Court held that the treaty and its implementing legislation took precedence over any conflicting state power of regulation. This precedent was used to make similar treaties with Mexico (1936) and Japan (1973) and to support and justify elements of the Endangered Species Act and migratory fishery and marine mammal protection legislation.

The Constitution grants the federal government (like a private citizen) authority to protect its land and property. This provision was employed to prohibit all hunting in Yellowstone National Park (1894) and to close to hunting bird breeding areas protected by the National Wildlife Refuges System (1906). These early actions went unchallenged. The federal government was assumed to have the landowner's right to prohibit hunting, but just how far the property clause applies to wildlife has been a subject of debate for the last half century.

In the late 1920s, Gov. George Hunt of Arizona, taking a states' rights position, opposed a Forest Service plan to remove deer on the Kaibab Plateau to protect range and forest resources. A deer kill was needed, but Gov. Hunt didn't want it to occur under federal regulation. The argument went to the Supreme Court and in 1928, the court ruled in favor of the Forest Service, noting the United States had the power to protect its land and property.

Another Supreme Court case, involving a federal research project where deer were taken in the Carlsbad Caverns National Park without approval of New Mexico wildlife authorities, was also judged in favor of the federal government. Still, some doubt existed about the relationship between regulating wildlife and protecting the land.

That issue seems to have been settled by the Supreme Court's 1976 decision on the Wild, Free-Roaming Horses and Burros Act. That legislation was enacted in 1971 to protect all unbranded and unclaimed horses and burros on public land. New Mexico authorities, claiming range damage and state wildlife management authority, removed some burros from land owned by the Bureau of Land Management (BLM) and sold them. The state was challenged by the BLM. New Mexico responded by suing to get the act declared unconstitutional. A lower court ruled in favor of New Mexico, but the Supreme Court later reversed this decision and said Congress's power to protect federal property included power to regulate and protect the wildlife living there.



The third constitutional authority supporting federal wildlife law is the power of Congress to regulate interstate commerce. The current inference is that a state loses control over utilization of wildlife once it permits that wildlife to enter the stream of commerce. This was the justification for the Marine Mammal Protection Act. This authority hasn't been challenged to the same degree as the treaty and property powers, but many observers believe if it were, the outcome would be the same.

When criticized about federal wildlife legislation, members of Congress—particularly those on House and Senate environmental subcommittees—are quick to point out their authority and responsibility as stated in the Constitution and endorsed by Supreme Court review. They point out this authority has always been present; it is just now belatedly being asserted. In every case of federal wildlife legislation, the lawmakers claim (with considerable evidence) an expression of national concern (political pressure) and a clear national interest and responsibility. In other words, they have sound legal and political justification.

Rep. Robert Leggett (D-California), chairman of the House subcommittee handling most wildlife legislation, has said that any time enough citizens feel strongly enough and express themselves loudly enough about any subject, we are likely to have a constitutional case for federal action under the general welfare clause of the Constitution.

Congress claims that, as the people of this country become more sophisticated in their understanding of wild animals and the interrelationships we call ecology, they

become less tolerant of local reactions to what are not really local problems. As interest in wildlife increases, people in many parts of the country increasingly demand uniform federal standards which all states should meet. It follows that federal agencies will be called on more and more to discharge this federal will and enforce these new national standards with or without the cooperation of the various state wildlife agencies. With increasing frequency, the wildlife resources of this country are viewed as national resources and citizens are asking for a voice in wildlife management decisions outside their states. Citizens are refusing to tolerate inconsistent management of species over multistate areas.

THE STATE VIEWPOINT

Returning to the authority of the Constitution, the Tenth Amendment states that all powers not delegated to the federal government nor prohibited to the states are "reserved to the states respectively, or to the people." Since authority over wildlife is not expressly defined in the Constitution, many people believe it belongs to the states. Some feel that to apply the treaty or commerce provisions of the Constitution to resident wildlife is stretching a point. Others believe that to apply national standards to very different wildlife populations is hasty, crude politics at best and bad science in any case. Moose in Maine, Montana and Alaska, or bobcats in New Jersey, Michigan and Idaho, or wolves in Texas, Minnesota and Alaska are all in different situations and they can hardly be managed by the same set of rules.

Early in this country's history, the states developed a doctrine of state ownership of wildlife. This doctrine was based on English law and practice, early court precedence and lack of early federal interest in wildlife. In practice, the system had many failings but it also had its strengths. It was—and is—responsive to local interest. Management by states can be tailored to local conditions. The management trust is more closely aligned to the will of the people affected and the biological needs of specific wild populations.

The states' wildlife position was most clearly stated in an 1896 Supreme Court decision involving the state of Connecticut and a market hunter named Geer. Geer legally killed some game birds, intending to ship them out of state. Under state law, Connecticut convicted Geer of intending to market the game birds. Geer appealed to the Supreme Court, claiming the state had no authority to prevent him from selling wildlife across state lines. Since Congress had unquestioned authority to regulate interstate commerce, it was an important case involving wildlife jurisdiction.

Tracing the history of government control of wildlife from Greek law on, the Supreme Court ruled in the Geer case that states had the right to control and regulate "the common property in game." Further, the court ruled it was the duty of the state to preserve for its people a valuable food supply. This case (161 U.S. 519 [1896]) stands today as the starting point for any legal or philosophical discussion of state wildlife jurisdiction. Unfortunately for the states, the last time the state ownership doctrine received authoritative judicial support was in 1912. Still, the Geer decision stands and the common law inferences are used

today to support the states' pollution control authority to protect the environment for wildlife.

States see recent federal legislation as pre-empting traditional states' rights. They fear a centralization of authority in Washington; they fear weakened management control and loss of each state's ability to respond for its residents. Concern exists that the federal government is working toward regulating hunting and fishing on federal land and some see a trend toward a federal hunting license. A few even fear that the bottom line is a return to the medieval situation where an overpowerful central authority eventually removes hunting rights and firearms from the majority.

THE ALASKA WOLF CASE

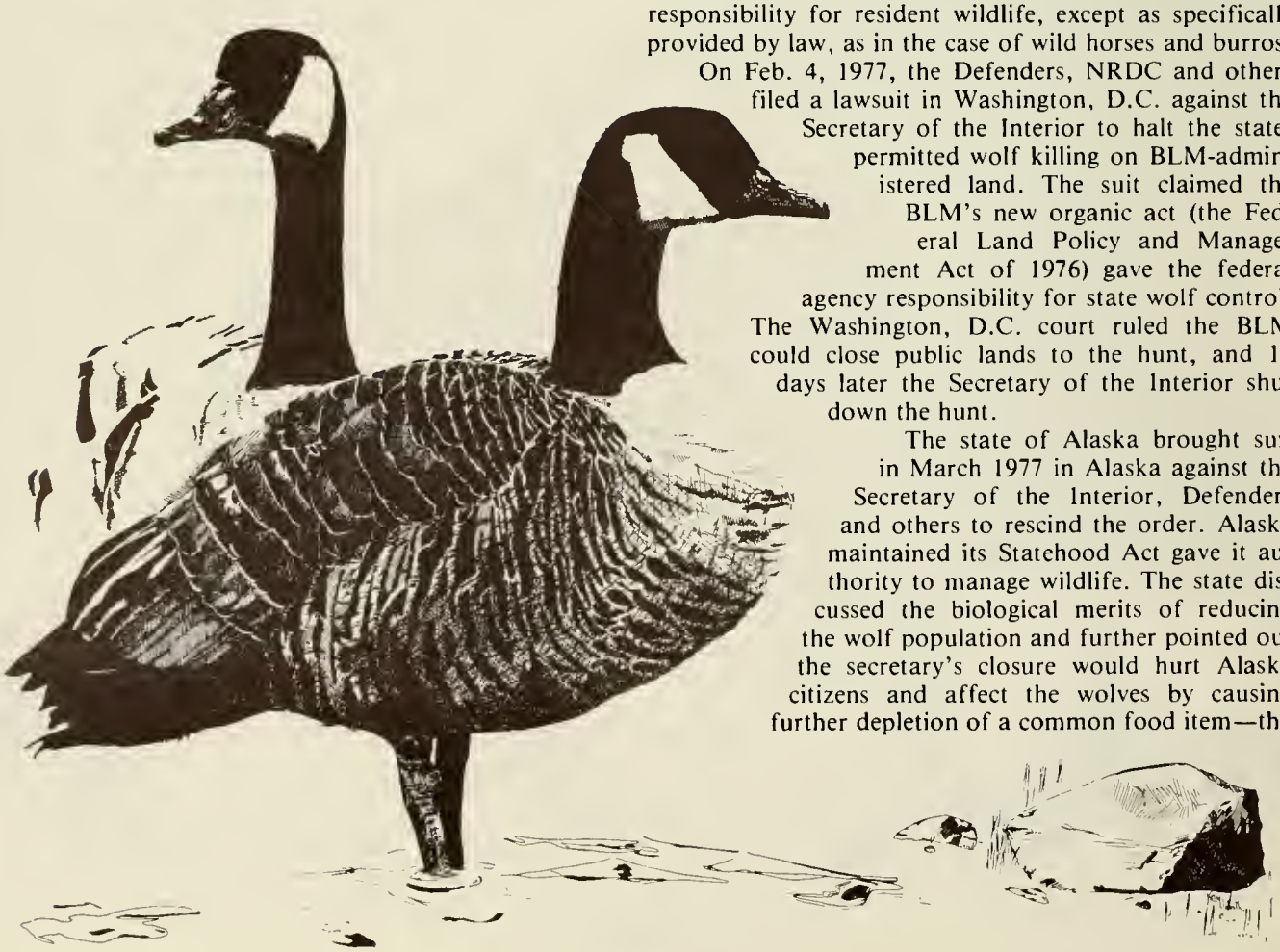
The latest and still undecided test of state/federal wildlife jurisdiction involves wolves and caribou in Alaska. The western arctic caribou herd roams an area almost the size of Montana (147,138 square miles) in northwestern Alaska, west to the trans-Alaska oil pipeline. As late as 1970, estimates indicated there were over 200,000 caribou in the area. In 1975, the estimate was down to 100,000 caribou, and by July 1976, the published estimate was 52,000. Many reasons were offered for the decline: predation, overharvest by the natives, sport hunting, snowmobiles, long-range rifles, aerial spotting, disease, some kind of as yet unknown cyclic phenomenon, mismanagement and various combinations of all these reasons. But the fact remained: The caribou herd had experienced a dramatic crash.

In August 1976, the Alaska Department of Fish and Game proposed reducing the wolf population in the caribou herd's winter range by 80%—about 800 wolves—by aerial gunning. The gunning would occur from December 1976-February 1977. The state believed this action necessary to protect and allow expansion of the caribou population. The proposal was based on the controversial assumption that wolves were largely responsible for the decline, and decreasing wolf numbers would help the caribou population. The wolf kill was to have taken place entirely on federal BLM-administered land.

During October 1976, the Alaska Department of Fish and Game conducted public hearings on its caribou management program. In addition to help from other groups, the department received support from the Alaska Conservation Society (1,250 members), an environmental group that had questioned and opposed other Alaska wolf hunts. The Washington, D.C.-based Defenders of Wildlife opposed "the aerial slaughter of wolves," and asked for contributions to fight the issue. The Natural Resource Defense Council (NRDC), with 34,000 members and based in New York, formally requested that the BLM prepare an environmental impact statement (EIS) on the state's proposal. The BLM replied it was not required to prepare an EIS because it did not have responsibility for resident wildlife, except as specifically provided by law, as in the case of wild horses and burros.

On Feb. 4, 1977, the Defenders, NRDC and others filed a lawsuit in Washington, D.C. against the Secretary of the Interior to halt the state-permitted wolf killing on BLM-administered land. The suit claimed the BLM's new organic act (the Federal Land Policy and Management Act of 1976) gave the federal agency responsibility for state wolf control. The Washington, D.C. court ruled the BLM could close public lands to the hunt, and 13 days later the Secretary of the Interior shut down the hunt.

The state of Alaska brought suit in March 1977 in Alaska against the Secretary of the Interior, Defenders and others to rescind the order. Alaska maintained its Statehood Act gave it authority to manage wildlife. The state discussed the biological merits of reducing the wolf population and further pointed out the secretary's closure would hurt Alaska citizens and affect the wolves by causing further depletion of a common food item—the



caribou. The Alaska court agreed with the Washington, D.C. court and the secretary's closure order stood.

This second case is being appealed. Montana, along with a number of other states, has joined the case in behalf of Alaska. In both cases filed against it, the Department of the Interior argued that, while the secretary has authority to close lands to hunting to protect and enhance *wildlife habitat*, he does not have authority to close lands to hunting to protect *wildlife per se*. Interior's attempted distinction between management of wildlife habitat and wildlife was rejected by both courts. The final decision on the appeal will be interesting and could significantly alter the traditional role of the states in wildlife management.

THE CHANGE

Popular interest in wild animals is increasing, while the resource base is decreasing. Wild animals now mean more to a wider range of people than ever before. With urbanization, political power has shifted to the cities, taking the authority for wildlife decision-making with it. No longer can wildlife be reserved solely for a rural interest in hunting and fishing. National interest in the wildlife resource was bound to develop and expand beyond a limited interest in game animals. As we lose contact with what was once common, it is natural to take an interest in and hold on to what is left. The states and those with long experience in wildlife matters knew change was imminent . . . but it came so fast.

Popular interest in wildlife developed along with the general environmental awareness of the 1960s. New conservation and environmental groups proliferated, many with limited special missions and single goals. Some of these goals did not mesh well with established, traditional, state-run wildlife management programs. Today, dialogue among the various wildlife interests is less intimate than it used to be a decade ago when representatives of half a dozen wildlife groups could hammer out a compromise over coffee. Congress was sensitive to this new environmental rush and a legislative phase a little out of sync with the developing interest ensued.

Congress has reacted and in some cases overreacted to surges in public emotion. The shortest and easiest route for changing wildlife policy is through Congress. Rather than deal with each of the 50 states or wrestle with the federal bureaucracy, special wildlife interest groups are going to Capitol Hill and getting results. Witness: Public Law 92-159, prohibiting shooting from aircraft; Public Law 92-195, the Wild, Free-Roaming Horses and Burros Act; Public Law 92-522, the Marine Mammal Protection Act; Public Law 93-205, the Endangered Species Act, and Public Law 94-265, the Fishery Conservation and Management Act of 1976. There is legislation for whales, grizzlies, against trapping, on animal damage control and more—all within the last seven years.

These efforts are well intended, but some ignore scientific advice and others are just not practical. Some observers in Washington believe this legislative "quick fix" may be winding down. Appropriations for statutes already on the books are way under requested budgets—the appropriations committees march to a different constituency. Congress is checking itself and wisely conducting oversight hearings to assess the effect of existing wildlife laws.

The abrupt change in wildlife rule, inflexible moratoriums, hastily drafted regulations, new financial controls and the attendant strings and paper work have strained the trust and cooperation that has existed between federal and state agencies. The boundaries of wildlife jurisdiction are confused. They lack focus. In the fog, a lot of important wildlife matters have been deferred to the courts. Management by judicial decree is a step backward. In the interim, duplicated efforts and wasteful power struggles result. The growing inefficiency is most dramatically expressed in the amount of paper work required to get anything done.

The next phase will be an administrative and management adjustment to the current situation. Some of this change may already be starting. In the last two years, the Montana Department of Fish and Game has signed new Memorandums of Understanding with the BLM, U.S. Fish and Wildlife Service and Forest Service. Wildlife groups and agencies in Montana are making new efforts to coordinate their various interests. A complete adjustment will take time. New roles are evolving for the different agencies as they struggle to argue for their traditional constituents, which, incidentally, are also changing.

Relatively few people really care who manages wildlife, just so they do it in accord with the public's interest and in the interest of the wildlife resource. Herein lies the major rub in managing wildlife. Wildlife managers already have much information about what wild animals need. In some cases, they know much more than they can presently put into practice; but in other cases, key pieces of information are absent. It's the ever-shifting and often conflicting human desires and their coordination that keep the profession of wildlife management off balance.

Jurisdiction involves weighing the human variables more than working with wild creatures. To think that either the federal or state governments could solve major wildlife problems by establishing jurisdictional boundaries is to deny 2,000 years of wildlife regulations and the human being's capacity to change his mind. Resolution of the current jurisdictional confusion will help smooth out wildlife operations, but it probably won't solve any major wildlife problems.

SUGGESTED READING

"The Evolution of National Wildlife Law," by Michael J. Bean, prepared for the Council on Environmental Quality, U.S. Government Printing Office, Washington, D.C., 1977, 485 pages.

"An American Crusade for Wildlife," by James B. Trefethen, a Boone and Crockett Club Book, Winchester Press, New York, N.Y., 1975, 409 pages.

"Western Proceedings, 55th Annual Conference of the Western Association of State Game and Fish Commissioners," Seattle, Wash., July 13-16, 1975.

"Western Proceedings, 56th Annual Conference of the Western Association of State Game and Fish Commissioners," Sun Valley, Idaho, July 25-29, 1976. ■

A flight of geese outlined against the autumn sky, a raft of ducks floating gracefully in a secluded cove. There are few of us who have not paused to marvel at these sights.

For some, there is the challenge of gunning, of matching wits with a wise old honker. For others, the challenge is in capturing the natural beauty on film or canvas — or just knowing that the birds are there.

But the greatest challenge of all is in preserving and restoring our wetlands — the vital element for the continued well-being of waterfowl.

And though many are not aware of it, the American hunter has long been the driving force behind waterfowl conservation. Of the some 13.5 million acres preserved for migratory bird habitat in the U.S., 8.25 million acres (61%) are preserved as a direct result of hunting-oriented programs. This habitat has been acquired with funds from waterfowl hunting stamp sales, with revenue from special taxes that sportsmen pay, and through the private efforts of sportsmen's groups. It is time that all of us who share a common concern for waterfowl work to maintain what habitat is left, and to restore what we can.

You can help waterfowl by supporting wetland preservation programs in your community.

What if there be no more goose music?

Aldo Leopold, *A Sand County Almanac*

Presented by the National Shooting Sports Foundation and approved by the International Association of Fish and Wildlife Agencies.

The Demise of Site Number Eight

by Ken Walcheck

drawing courtesy of
Montana Business Quarterly

A DUST-COVERED PICKUP tops a hill in the predawn darkness and eases to a stop on a gravel road punctuated with chuckholes. The driver—a wildlife biologist—reaches across the seat, lowers the mud-spattered window and shivers as a cool draft of sage-scented air flows into the cab.

The double-syllabled, flutelike song of a meadowlark pierces the crisp, early morning air as the biologist prepares to monitor the activities of sharp-tailed grouse on site number eight, a term designating one of the courtship dancing grounds on his inventory route at the head of Sarpy Creek, northeast of Hardin, heart of eastern Montana's coal country.

A faint glimmer of diffused light beckons on the eastern horizon. Suddenly, a sharptail wings over the truck, applies his aerial brakes and lands on the hill. The morning stillness is abruptly broken by a muffled, rolling sound as he stamps his feet up and down in a blurred frenzy. With wings outstretched, tail erect and vibrating, the dancing male moves in a semicircle as he continues his courtship performance.

A few minutes later, a second sharptail glides in from the north and joins his counterpart on the trampled dancing arena, hooting, cackling and pivoting like a prize fighter.

The fires of spring—which start in March for the sharptail—burn with increasing vigor as the days lengthen, until they flicker and die during late May. But today, the fires are stoked in full readiness. The dancing motions mimic the movements of a wind-up toy, solemn and stately, but yet spiced with humor and an arresting beauty.

The activities of the two males on the courtship arena are similar to those which have occurred annually for many decades. Yet, there is something foreboding in the air. A Westmoreland Resources dragline whines in the background as the operator positions a 325-foot boom with a 75-cubic yard bucket at the end. For several years, Westmoreland—one of Montana's growing coal companies—has been extending its operations at the head of Sarpy Creek. The systematic expansion which started in 1974 has posed a continuous threat to the security of the feathered occupants of site number eight.

As the biologist recorded information about the birds in his worn notebook, he thought back to his first visit with one of the early settlers who homesteaded in the Sarpy Creek country in the late 1890s. He recalled how they hunkered in front of the old-timer's log cabin and how the old man gestured with a broad sweep of his arm as he looked toward the distant mountains and spoke with a touch of pride of a vast, wide-open country lifting in great swells to the open horizon—a land vacillating between flat and rugged, hot and cold, durable and fragile.

He told of the many "hundreds" of sharptails in the area at that time, how he and his family lived in a tent that first winter and how wild chickens provided most of their food.

Later, ecologists would write of the Sarpy Creek Basin as a complex, dynamic entity capable of supporting myriad plants and animals, all acting and interacting under the pressure of nonliving forces—weather, soil, minerals and geologic catalysts—active since time began.

When biologists began observing site number eight in 1974, the dancing ground was situated in an old hayfield with a thin stand of brome grass and alfalfa. Despite the nearby mining activities, 14 males displayed that spring, and again in 1975.

Early in 1976, approximately 80 acres—including site number eight—was leased by the coal company to a pri-

vate landowner who plowed and planted the acreage into barley. Despite the disturbance, nine birds returned and displayed in the spring. That same year, the Department of State Lands, watchdog and monitoring agency for strip mining operations, issued a thumbs down ruling on the farming operation and further specified establishment of a buffer zone around the ground to minimize disturbance to the grouse.

A dense growth of weeds overtook the vacated barley field and in spring 1977, the grouse abandoned site number eight. However, six birds pioneered a new dancing ground situated on the crest of a grassy ridge about 30 yards from the old site.

During spring 1978, only two birds returned to the new site. Although the dancing ground has not been mined at this writing, each gaping bite of the bucket, each scoop of the front-end loader and each haul-truck departure narrows the gap and spells disaster for site number eight.

Department of State Lands officials anticipate the dancing ground will be mined within the next year after a mining permit has been issued.

The year 1977 was a big one for "King Coal" in Montana—over 27 million tons of coal was mined. Although final figures for 1978 are not yet available, 21.9 million tons was mined from January-October.

Despite the fact that Montana has some of the best mining and reclamation laws in the nation and supports a coal export policy, the tempo of mining is increasing and more and more wildlife habitat is disappearing each year. Although the disappearance of one small sharp-tailed grouse dancing ground is rather insignificant in the overall picture, the inescapable fact remains that life support systems are being altered at an ever-accelerating rate. And strip mining and burgeoning energy demands are not the only culprits. In addition to acreage eaten up by strip mining, over four million acres of state agricultural land—including some prime wildlife habitat—has vanished over the past 19 years. This land has been gobbled up by urbanization, highways, airports, and other developments.

Near the Sarpy Creek dancing ground, a lichen-splotched boulder that has endured eons of climatic changes lies partially exposed, a proper place for the sharp-tailed grouse of the Sarpy Creek Basin to record their last will and testament:

* * * * *

The present and past generations of the Sarpy Creek Basin dancing ground freely leave all sights and sounds of the surrounding Montana prairie to those who have the dignity to enjoy nature's gifts of beauty and richness.

To those humans who would have us go elsewhere, we bequeath the beauty, majesty and freshness of the great American steppe.

To those who have threaded their way through the native prairie grasses and scattered sagebrush, we bequeath the melodious song of the horned lark and the colorful composure of prairie wildflowers.

For those who have watched our courtship plumage thrust forth in all its color and splendor and for those who have heard our rustling feathers, powerful wing beats and eerie calls rolling across the prairie at dawn's first light, we offer the precious gift of the appreciation of things wild. The world and its human inhabitants so need to improve in this area.

Finally, with dignity and characteristic composure, we leave future generations armed with the knowledge that they have the right to resist the gross mechanical alterations of their life support systems. ■

Dear F&G

Special Parks Issue Pleases MO Readers

Your Special Parks Issue of *Montana Outdoors* has certainly been welcomed by the "silent majority" of outdoor recreationists. Most of us are interested in many types of recreation and fully realize that resource management for public benefit must, of necessity, take many forms.

The Department of Fish and Game has played a leading role in overall management of Montana's recreational resources for some time. However, your magazine has effectively masked these accomplishments by emphasizing preservationist-type activity.

We hope the Special Parks Issue marks the beginning of a new era for *Montana Outdoors*—one which will preclude the necessity of apologizing for having done a splendid job, as was noted in this issue.—*Everett E. Woodgerd, president, Missoula Snowgoers; Missoula, Mont.*

* * * * *

Your interesting and informative Special Parks Issue was indeed timely. It is very obvious, particularly to those of us living in rural areas, that the number of people participating in outdoor recreational activities is rising dramatically in Montana. This increasing recreational use often takes place on the more accessible land along our waterways and valley bottoms—land, for the most part, which is privately owned.

Public recreational use of private land presents similar management problems, whether the users are hunters, berry pickers, fishermen or river floaters. If cooperation between the department, outdoor users and private landowners is to continue, a correspondingly active and viable Parks Division within the department is a necessity.

Also, the Parks Division should be in a position to provide the leadership for the innovative programs referred to in the article by Gov. Thomas L. Judge. Cooperative management concepts such as conservation easements and recreational leases will help ensure ample outdoor recreational opportunities for all types of users.—*Hank Goetz; Greenough, Mont.*

* * * * *

I want to congratulate you on the fine Special Parks Issue of *Montana Outdoors*. I am a former Bozeman resident and I have spent as much time in Montana's outdoors with my family as possible, including all or part of every summer since 1967.

The articles in the Special Parks Issue showed that the state staff is doing its homework—something all taxpayers like to see. It's refreshing to read such positive articles, to know there is a public agency that really knows what it is doing and where it is going. As a former member of the Montana Committee for Rural Development for the U.S. Department of Agriculture, I can appreciate what you are doing for the people of Montana.

One thing that caught my eye was in the article, "Turning Money into Management: Financing State Parks," by G. Wesley Burnett and Don Hyyppa. They mentioned the possibility of charging a day use fee for Montana's recreation areas. Don't. The state should encourage, not discourage, short-term use of its parks and recreation areas. Having lived in several states and traveled in many more, it is my opinion that day use fees defeat the purpose of such leisure areas and actually give the park and recreation department a bad image.

As you know, Montana is unique in many ways. I would encourage you to keep it unique by not charging day use fees. There are other ways to generate revenue and, as Mr. Burnett and Mr. Hyyppa stated in another article, "Parks are for people."—*Walter Heid Jr.; St. George, Kan.*

* * * * *

We would like to comment on the Special Parks Issue of *Montana Outdoors*. We were very pleased to see that your department is finally giving some recognition to the Parks Division. The contents were very well put together and the articles were great.

We hope you will include this type of thing in each issue of your magazine.—*Fay L. and Darline L. McDowell; Lincoln, Mont.*

* * * * *

The Montana Snowmobile Association would like to express its thanks for the great coverage of snowmobiling in the Special Parks Issue of *Montana Outdoors*.

The articles were great and we like to see parks and recreation information included in each issue.—*Bob Didriksen, president, Montana Snowmobile Association; Lincoln, Mont.*

Proper Handling Of Game Animals

I am writing this letter to question the education procedures of the Department of Fish and Game. I operate a small meat processing plant in the Deer Lodge Valley and take in game animals during the season. I have always been an avid hunter, although not too much the last two or three years. In my hunting education, I was taught to take care of any game downed—deer, elk or moose—but I was taught to care for *each one* properly.

Why does the Fish and Game print clear, detailed instructions in the hunting map on field dressing a deer and skinning it out to complete proper care and leave it to be understood that an elk is cared for in the same way?

With the warm weather we have had the last few years, I have received large animals every season that are soured in the shoulders because they were treated for cooling the same as a deer. This seems especially true with large bulls. There should be a section in the printed instructions on opening the backbone of a large bull elk to ensure proper cooling of the thick, heavily coated shoulders.—*G. H. Pierson; P&S Custom Cutting; Deer Lodge, Mont.*

Flying Squirrels Visit Nightly

We enjoyed the Nov./Dec. 1978 issue of *Montana Outdoors*, especially Ken Walcheck's article about the flying squirrel, "Artistocrat of the Squirrel Family."

We moved to Montana in 1976 from California after my husband retired. We love the mountains around Philipsburg and the dense forest of lodgepole pine and Douglas-fir. This is a place of peace and quiet and also a place to enjoy wildlife. The chickadees and gray jays (camp robbers) eat from my hand.

After we learned that small owls lived in the neighborhood, my husband decided to build an owl house. After a

recycled paper

few weeks, we observed some straw in the house and from day to day, it would be shifted around. But we never saw an owl, so we decided our visitors had to be flying squirrels. We started watching in late afternoon near dark and sure enough, we saw flying squirrels leaping from their house to a nearby tree. At this time, we had four flying squirrels in the one house.

Early one morning, we heard the pine squirrels fussing and looked out to see the flying squirrels being chased out of their house. We didn't want this to happen, so my husband nailed large pieces of tin on the pole holding the squirrel house.

We started feeding the flying squirrels on a bird feeder. We put peanut butter out for them and they love it. We also placed a red light near the feeder so the squirrels would be easier to observe. Now we have a new feeder on our front porch and they are nightly visitors, very easy to observe from our window five feet away. They have become very friendly; with the porch light on, they hang on the sides of the trees by our porch and watch us inside. We have had many of our friends and neighbors stay late to see the show and some have taken pictures of them.

We feel we have been blessed to see some of the wild creatures which so few have been privileged to see.—*Virginia Craig; Philipsburg, Mont.*

Passing Motorist Identifies Himself

Perhaps a lack of interest was due to the incomplete story in the July/August 1978 magazine. Your story in "The Catchall" mentioned two entangled deer which were separated near Choteau. The article mentioned Jack LaValley, department warden; Ben Hoge, Frank Plachetka and a passing motorist.

Thanks a lot. I was the passing motorist who got everyone there and helped in separating the two bucks.—*John Brandvold; Bynum, Mont.*

Expand Catch And Release

In May 1978, I had the *pleasure* of fishing the "catch and release" section of the Madison River.

I would like to see the catch and release policy greatly expanded in Montana. It would substantially improve the *quality* of fishing.—*David McCannel; Great Falls, Mont.*

Access Roads Closed

We recently returned from our annual hunting trip to the Yellowstone Valley between Livingston and Gardiner and we noted a number of what I believed to be county or access roads that were actually fenced off and locked.

We normally do our hunting on railroad land, BLM land or forest range, but we found so many access roads closed, we actually could not gain access to the upper elevations.

I can understand the ranchers not wanting anyone hunting on their property, but I was under the impression that so-called county roads were to be left open for public access to the forest land beyond.—*E. H. Lindorfer; Oakland, Calif.*

Jenkins Prints Available

I have been subscribing to *Montana Outdoors* for some time and enjoy each issue. In the Sept./Oct. 1978 magazine, there was an article called "What is a Bird Hunter?" by Ken Walcheck. It was appropriately composed and entertaining to read. In a little different format and print style, this piece could be framed and placed in a cherished location by an avid sportsman.

The grouse paintings by Ron Jenkins were well done and the commentary added an interesting note to each one. In Arizona, the blue grouse is indigenous to one or two locations. A friend and I recently concluded a successful hunt on this species in an alpine setting. Are there any prints of Mr. Jenkins' blue grouse paintings available for framing? To frame the one in your magazine, two pages had to be detached to obtain the complete view.—*Milton G. Evans, member, Arizona Game and Fish Commission; Flagstaff, Ariz.*

* * * * *

• *Information about Ron Jenkins' grouse prints is available from Marie's Art-eries, 1639 South Ave. W.; Missoula, MT 59801 (406-542-0046).*—Ed.

Soapbox for Environmentalists

We have been receiving *Montana Outdoors* for many years and have delighted in the photographs of Montana's big game, game birds and beautiful scenery. The articles have been interesting and informative and we have often used both pictures and articles to make a point with our two children, who we hope to be raising as conscientious citizens and hunters.

However, in the past year, my husband and I feel your magazine has become more of a soapbox for the environmentalists and statisticians. There are fewer and fewer photographs from Montanans about Montana and more depicting the ravages of the land than the beauty the state provides.

Granted, we must be aware of the damages being done to the state by mining, real estate development and pollution, but the magazine's balance seems to sway more toward that type of article than the original format which was a handbook, of sorts, for the hunter, hiker, fisherman and photographer. I can't help but feel that it is more of a textbook for environmentalists and politicians than it is for the average Montana sportsman.

Therefore, we will be looking for a magazine that writes to and for the sportsman rather than one that serves as a sounding board for the policies of the Department of Fish and Game.—*Mrs. Wayne H. Finney; Great Falls, Mont.*

Free-lance Contributions

I have subscribed to your magazine for more than a year and enjoy it very much. I am impressed with the intense impact your articles have on everyone's views, even on someone who only takes time to glance through it.

The photographs are outstanding and the drawings are clear and precise. Yours is a magazine I will recommend to anyone.

I have one question: Where do you obtain the superb photographs? Do you have your own staff photographer or do you accept work from hobbyists? I have some pictures taken in the Bob Marshall Wilderness, Bitterroot range and Rattlesnake drainage near Missoula.—*Mark Young; Bozeman, Mont.*

* * * * *

• *We welcome contributions from free-lance photographers. We prefer 35mm transparencies. Photographs will be published at the discretion of the editor.*—Ed.

Bird Feeding Article Answers Many Questions

We are often asked for information on care and feeding of birds during the winter (especially this one). I found Ron Paulick's article in the Jan./Feb. 1979 issue especially well done, complete and timely. I would like to use it as part of our response to the type of inquiries just mentioned.

You might consider reprinting the article as a bulletin or information pamphlet for your own or similar purposes. I found it answered every single question from the most recent inquiry to come across my desk.—*Robert J. Jonas, professor of zoology and wildlife biology coordinator, Washington State University; Pullman, Wash.*

A Tempting Twosome!

A TEMPTING TWOSOME—a subscription to *Montana Outdoors* plus a handsome, leatherlike binder in which to store an entire year's issues.

The binder, a rich brown with gold lettering, has metal rods which hold the magazines securely in place. The binder is a bargain at $5 and it is attractive enough to grace any coffee table, plus you'll avoid misplacing issues containing favorite articles or photos.

In the coming months, *Montana Outdoors* will feature articles of interest to nearly any reader—an annual float trip down the mighty Missouri River, parks in the eastern part of the state, Montana's fish "species of special concern," how to improve your outdoor picture-taking endeavors, a report on a white-tailed deer research project in the Swan Range in northwestern Montana, plus much more. And a one-year subscription costs only $5.

With Mother's Day just around the corner, graduation approaching and Father's Day not far behind, what better gift than a subscription to *Montana Outdoors* and a binder in which to store the magazines. Fill in the order form below —for a tempting twosome designed to delight any recipient.

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Chronicle on a Cabin Wall

A warm April sun basted my face as I sipped hot coffee from a tin cup at our turkey hunting campsite in the Missouri River Breaks. As I settled in next to a pine tree, one of my hunting companions trudged into camp with an interesting tale. He related how he stumbled across an old, weathered log cabin with all kinds of interesting notations written on the turn-of-the-century mortar used to fill the chinks between hand-hewed logs.

When I questioned him further, he elaborated on some of the notations he could remember. Most of his references centered on biological events that had occurred around the homestead, references such as "saw first blue birds; heard first toad; cottonwood buds busting out," and "500 geese went south." Dates, from 1928-62, were included with most of the recordings.

I didn't get to the cabin during that spring hunt, but I vowed to return some day to document the information written on the "blackboard" mortar by some astute observer.

I recently fulfilled that obligation and saw for myself the notations of a man who had a real appreciation for a rough, dissected country and its occupants. As Aldo Leopold once wrote, "There is much confusion between land and country. Land is the place where corn, gullies, and mortgages grow. Country is the personality of land, the collective harmony of its soil, life, and weather. Country knows no mortgages, no alphabetical agencies, no tobacco road; it is calmly aloof to these petty exigencies of its alleged owners."

It was apparent the former occupant of the homestead knew the difference between land and country. He was well aware that "his" country was more than a plain exterior which to some must have seemed homely and drab.

The former occupant probably didn't realize it, but he was dabbling in phenology and recording some valuable biological information. (Phenology is a branch of science dealing with the relationships between climate and periodic biological phenomena.) For example, after comparing the dates on the cabin wall from 1944-62, I learned the homesteader's "wild cherries" blossomed as early as April 28 and as late as May 21, with most flowering dates between May 5 and 13. Robins could be expected to return to the 'breaks country between March 25 and April 5, and the little "ren" faithfully returned around May 10.

During our mid-April turkey hunt, I observed many flowering pasqueflowers and sagebrush buttercups as I tramped through the park-like openings scattered throughout the pine forest. My curiosity got the best of me when I visited the cabin and checked the phenological records: The pasqueflower began opening about April 10 and buttercups started to bloom about April 5. These early harbingers of spring were the first showy flowers to greet the gobblers as they dispersed from winter groups to establish breeding territories.

Certain flowers, then, can serve as clues to what will happen next in nature's sequence of events. For example, they can indicate the time when deer will drop fawns, when Canada geese eggs will hatch and when young horned owls will leave the nest.

The homesteader also recorded other incidents of interest to him, as he sat by the kitchen table next to the inside "blackboard":

"First air plane flew over this place October 31, 1928—ther was blizard next day."

"Put steel roof on house—1939."

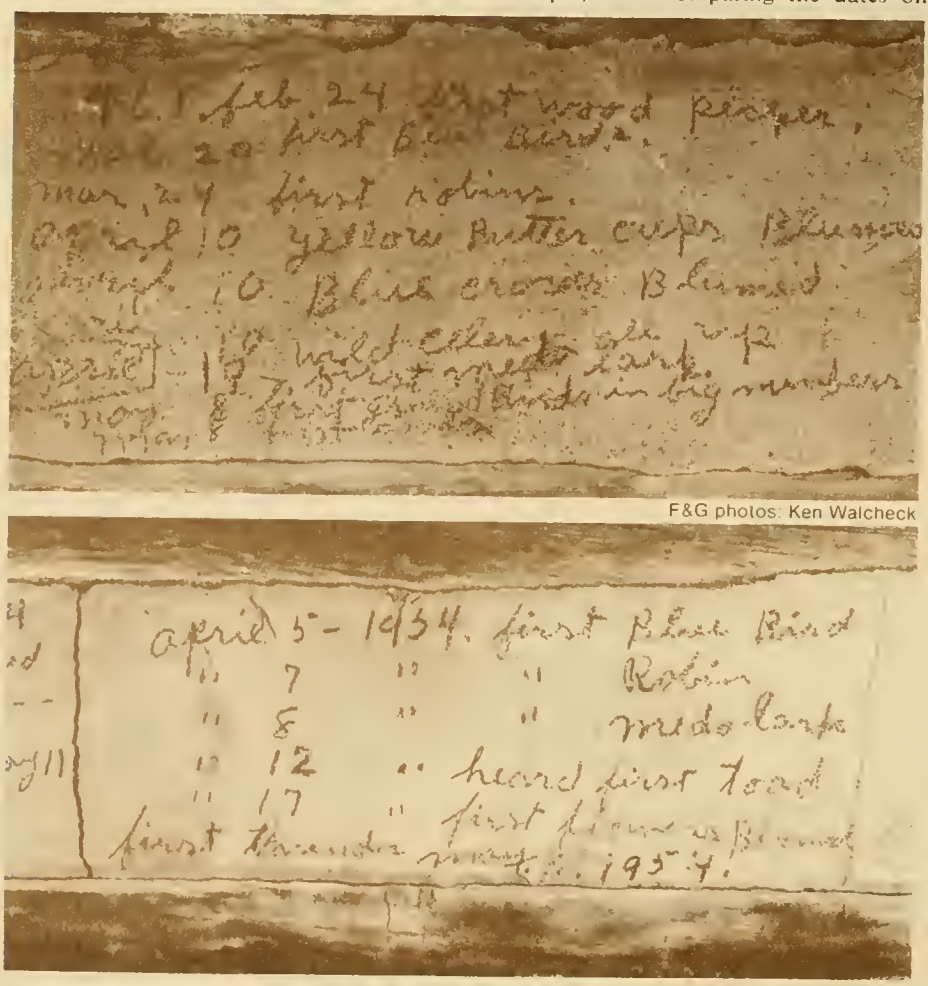
"Started burning coal fall of 1953."

"First helicopter flew over this place Sept. 26, 1953 about 10 o'clock in forenoon, it was going west."

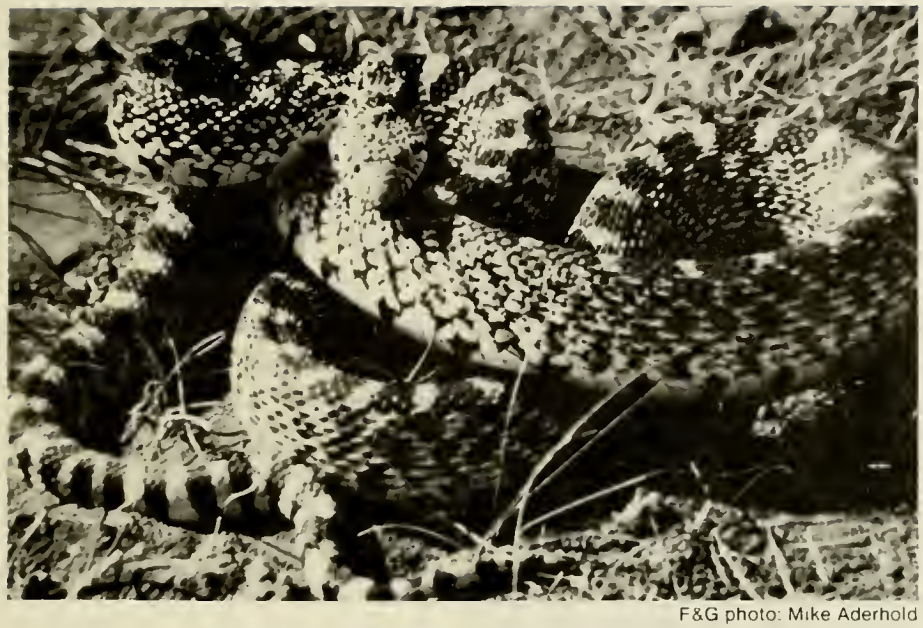
Our biological reporter was a big man, endowed with respect for his fellow man. His sprawling, bold writing told me he wore a size 16½ shirt and size 46 underwear. During the first year of World War II, he wrote, "Equal land and air to all men."

One of the requisites for comprehension of nature is an understanding of ecology, which is by no means coextensive with "education." In fact, a basic understanding of ecology does not necessarily originate in courses bearing ecological labels. Perception cannot be purchased—with either advanced degrees or dollars. Like all real treasures of the mind, ecological perception is a rare trait bestowed on few.

As I left, I turned to take one last look at the old homestead. I felt one regret—not being able to talk with this individual who had such unusual rapport with the surrounding country, a rapport very few of us possess.—*Ken Walcheck*



F&G photos: Ken Walcheck



F&G photo: Mike Aderhold

The Bull Snake: Montana's Big Hisser

by Vince Yannone

ABOUT 3,000 SPECIES of snakes in 10 different families inhabit the earth. Despite the fact they have no limbs, snakes have adapted to all major habitats—land, water, trees, etc.—and have worldwide distribution.

Montana has 10 snake species; of these, only one is known to be poisonous, the prairie rattlesnake. The smallest Montana species is the rubber boa. The largest snake found in the state is the bull (or gopher) snake. Even though it may be only 15 inches long at hatching, a large adult could be six feet long. The bull snake's color varies from yellow to cream, with black, brown or reddish-brown blotches on its dorsal or topside. The blotches are farther apart on the tail than on the body. The ventral (underside) surface is white to yellowish, often spotted with black.

Bull snakes live in a variety of habitats—in lowlands, high in the mountains, in deserts, prairies, brushy areas, woodlands, coniferous forests and farm lands. In Montana, bull snakes are especially common in grass lands and open country with low bushes or shrubs.

One of the bull snake's most distinguishing characteristics is its hiss. The snake violently expels air against the side of a small, flat flap of tissue which divides the stream of air and increases the volume of the hiss. The bull snake uses the hissing sound as a warning mechanism and scare tactic. Another characteristic is tail shaking. When the bull snake combines these two behavioral characteristics, many people mistake it for a rattlesnake.

An average bull snake weighs about 2.5 pounds. It consumes about 6.7 pounds of rodents in a six-month period, or a weight equal to 12 pocket gophers.

Bull snakes neither chew nor tear their food, but swallow it whole. They can eat prey larger than they are because of a series of adaptive modifications. One of the most important of these is the frontal joining of their two jaw bones (mandibles) by an elastic ligament. This, combined with modification of the jaw bones' attachment to the skull and movable bones in the palate, enables them to eat large prey.

A typical snake in a temperate climate mates in the spring and has one brood per year. The bull snake lays from five to 22 eggs in July or August. The female lays her eggs in a concealed area in material that stays warm enough to ensure development. For example, she might lay her eggs in decaying vegetable matter warmed by the action of decomposition. Or, she might place them where the sun's heat reaches them directly—in sand or loose gravel in an open field or lightly wooded area. The young hatch between August and October.

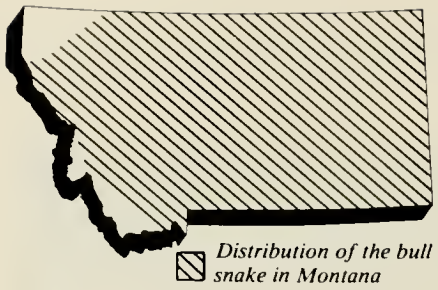
The incubation period varies from a few days to three or even four months. Two factors affect the time of hatching—(1) the stage of development of the embryo at the time the egg is laid and (2) the temperature at which the clutch is kept. Because of these two variables, it is impossible to list an average incubation period for bull snakes or other snake species.

How parent snakes care for their brood varies considerably among species and even among individuals of the same species. Some bull snakes guard their clutches, while others desert them immediately.

Since reptiles are cold blooded (poikilothermous) with no means for regulating body temperature, they are markedly influenced by the temperature of their environment. In the tropics, snakes are active yearround, but in temperate regions, they are active only during the warm part of the year. Species that live in the desert or semidesert venture out

on warm spring and autumn days, but avoid excessive midday heat by appearing only in early morning or late in the day. In hot summer months, desert-dwelling snakes become night prowlers. They are most agile when their body temperature is only a few degrees below the critical limit, 113°F (45°C). Death ensues quickly from overheating when their body temperature reaches the critical limit.

The bull snake and other species in temperate regions hibernate in winter. Hibernation enables the snake to conserve its strength because it functions at a much slower rate than usual. This slower rate requires less fuel—fuel stored by the snake in the form of fat. Thus, it can survive the cold and lack of food that come with winter. When warmer temperatures arrive and food again becomes abundant, the snake comes out of hibernation.



Distribution of the bull snake in Montana

Although the bull snake will never win any popularity contests, its usefulness—particularly in controlling rodents—is often underestimated. It's too bad that many people respond to their fear of Montana's largest snake by senselessly killing it. Snakes, too, have their spot in nature's scheme. ■

Contributors

"The Mystery of Migration" has fascinated man for centuries. As **Bill Phippen** notes in his article on page 2, we still cannot explain how "certain animals can navigate hundreds of miles of open ocean to a secluded island beach or cross a continent to a spot thousands of miles from where their journey started." Phippen has completed a three-month internship with *Montana Outdoors;* before that he served as editor of our Special Parks Issue. He has a B.A. in English and biology from St. Lawrence University in Canton, N.Y., and is completing work on an M.A. in journalism from the University of Montana, Missoula.

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Chief Plenty Coups of the Crow had a dream: He wanted to present "To All the Children of Our Great White Father" a lasting memorial to the Crow tribe, so he donated 40 acres of his land as a "Nation's Park." The area given by Chief Plenty Coups is now a state monument and it represents a completely new management concept for the department's Parks Division. To learn more about an area with unique recreational potential and educational value, turn to **Harley Sorrells'** article on page 8. Sorrells is the curator of the Chief Plenty Coups State Monument. He holds a B.S. in graphic design from Montana State University, Bozeman, and has done undergraduate and graduate work in archaeology, specializing in northwestern plains archaeology.

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Mike Aderhold examines "The Knotty Issue of Wildlife Jurisdiction," its history and current status. As he writes, "Governments, laws and politics have been involved with wildlife for over 2,000 years." Aderhold is the department's information officer for the Glasgow region. He has had wildlife experience with four federal agencies: Corps of Engineers, Forest Service, Fish and Wildlife Service and the Bureau of Land Management (BLM). In 1977, Aderhold served a five-month internship with the BLM in Washington, D.C. Turn to his article on page 15.

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The pen-and-ink illustrations for "The Knotty Issue of Wildlife Jurisdiction" were done for *MO* by **Kelly Vollrath** of Great Falls. Two of his works, "Wood Ducks" and "White-tailed Buck" were selected for covers of *North Dakota Outdoors.* The self-taught artist specializes in wildlife, but has begun to use his medium of pen and ink to depict modern-day rodeo scenes. Many of his works are available as special limited edition prints, signed and numbered. Several of his limited edition prints have been sold at Ducks Unlimited banquets in Montana and North Dakota; prints of one drawing will be sold by Ducks Unlimited at chapter fund-raising auctions all over the United States. For additional information about his drawings, contact Vollrath at 2909 Third Ave. N.; Great Falls, MT 59401.

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Ken Walcheck, the department's information officer for the Miles City region, contributed two articles to this issue of *MO.* In "The Demise of Site Number Eight," on page 21, Walcheck conjectures about the future of a sharp-tailed dancing ground in the Sarpy Creek area of eastern Montana's coal country. In "Chronicle on a Cabin Wall," on page 26, Walcheck unravels the history of an old log cabin in the Missouri River Breaks with some interesting biological and personal notations on its walls—"notations of a man who had a real appreciation for a rough, dissected country and its occupants."

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"The Bull Snake: Montana's Big Hisser" has more going for it than a warning, scary hiss: It is Montana's largest snake species. As **Vince Yannone** writes in his article on page 27, ". . . a large adult [bull snake] could be six feet long." Although the bull snake won't win any popularity contests, its usefulness, particularly in controlling rodents, is often overlooked, Yannone notes. In addition to his television work for the department, Yannone also serves as the assistant chief of the Conservation Education Bureau.

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Two articles on the Yellowstone River flow reservations round out the March/April issue. The first, "A Free-Flowing Yellowstone: The Reservations Challenge," was written by **Dr. Wilson F. Clark,** a member of the Board of Natural Resources and Conservation which made the final reservations decisions. Clark is a professor of physical sciences at Eastern Montana College, Billings; his article begins on page 29. In "A Free-Flowing Yellowstone: No Longer Just a Dream," **Jim Posewitz** writes, "Perhaps one cannot go back to the beginning of this gigantic struggle, to find the people who made it possible, the people who made it happen." For the Department of Fish and Game's flow reservations, however, Posewitz was surely one of those individuals who "made it happen." As administrator of the Ecological Services Division, Posewitz' planning units, biologists and personal efforts provided much of the information crucial to the department's flow reservations testimony. Turn to his article on page 34.

F&G photo: Craig Sharpe

A FREE-FLOWING YELLOWSTONE:

The Reservations Challenge

by Dr. Wilson F. Clark

• *Members of the Board of Natural Resources and Conservation involved in decisions on the Yellowstone water reservations were: Cecil Weeding, Jordan, chairman; William H. Bertsche, Great Falls; Dr. Wilson F. Clark, David G. Drum, Billings; Charles L. Hash, Kalispell; J. Viola Herak, Charlo, and Dr. Roy E. Huffman, Bozeman* —Ed

THE FINAL DECISIONS on the Yellowstone River water reservations were made by the Montana Board of Natural Resources and Conservation on Dec. 15, 1978. Since then, each applicant for a reservation has been informed of the specifics of its own reservation. But few people aside from the applicants are aware of what those decisions were, what they really amount to or why some applicants received all or a large part of their requests while others received a much smaller part or were totally denied. This article endeavors to make those points clear.

The Yellowstone River moratorium went into effect in spring 1974 as a result of the growing concern over large industrial filings for water. The law invited "public bodies" to lay out their long-range water plans and to apply for water reservations to meet their expectations of growth. The "public bodies" finally applying were eight cities, 14 conservation districts, two irrigation districts, four state agencies and two federal agencies. Industrial users were not allowed to request reservations.

Applicants got a slow start for many reasons. The actual eight weeks of hearings did not occur until summer 1977, and the final summary hearing did not occur until summer 1978. The board did not receive the full record until mid-September 1978. Only then could the board really start its deliberations. Because of several extensions of time granted by the Montana Supreme Court, the board had until Jan. 1, 1979 to complete the immense amount of work needed and to make its final decisions. It was a challenging task, but board members got the job done.

While all this was going on, much heat and little light were generated, for each applicant fiercely defended its own request and just as fiercely attacked the requests of some other applicants. Many absurd statements were presented as gospel, such as: "If all the applications were accepted, the river would be dry, because the sum of all the applications is two and one-half times the average flow of the river." How silly this statement was is shown by the final results. The board rather wistfully wishes that folks would not get needlessly upset, irate and polarized on the basis of

such irresponsible statements, and it wishes that advocates would outgrow their tunnel vision. Depsite all that, the laborious process was carried out and the decisions were made.

In making their decisions, the board members were in general agreement on several critically important concepts and on the philosophy with which they approached the decisions. These include:

(1) Board members believed their ultimate responsibility was to the people of Montana in general and to those in the Yellowstone River Basin in particular. Such responsibility transcended the reservation requests of the many applicants, each of which considered its own reservation paramount. The board endeavored to take a long-range overview, to put the applications into perspective and, as far as possible, to reconcile the many conflicting and sometimes excessive water reservation requests.

(2) Board members were fully aware of the complexity of this case. From the outset, it was evident that the newness of the reservation concept, the stringency of the regulations and the magnitude of the task of preparing applications put a heavy burden on the applicants and on the Department of Natural Resources and Conservation charged with reviewing the applications. The board viewed those difficulties with understanding and did not take an ultralegalistic stance.

(3) Board members were inclined to grant, in each case, the largest reservation that could be justified by the application, the record, the evidence and the available water supply. The decisions are not etched on stone, since the law requires a thorough review of the reservations at least once every 10 years, at which time the board may "modify" the reservation.

(4) Board members believed that every encouragement should be given to development of off-stream storage with pumping from the Yellowstone River during high-water periods. We saw off-stream storage as the only way high-water flows could be made available for later release during low-flow periods to benefit all downstream users and in-stream reservations.

(5) Board members also believed they had an obligation to foster, encourage and suggest conservation measures for the use of water. The prodigal-use attitudes of the past are no longer tenable. Efficiency of water delivery and use, conservation in use and a sense of personal responsibility must be developed by each user. Only through such changes in attitudes leading to changes in habits and patterns of use will we leave a water legacy for future generations of Montanans.

In making decisions within this framework, board members recognized that Montana is a state where natural resources—especially water—support both economic activity and nonmarket uses. This has produced a classic conflict between economic values and environmental values. The availability of water is central to the natural resources situation in most instances. Board members had the responsibility of achieving a balanced allocation of water in the Yellowstone River Basin to meet the needs of consumptive uses and in-stream reservations. The major problem was to ensure realistic consideration of all factors that should enter into the water reservations.

DEFINITIONS

Before discussing the Yellowstone reservations, it is important that the following frequently used terms be clear:

(1) Acre-foot (Af)—An amount of water that covers one acre to a depth of one foot. This amounts to 325,900 gallons.

(2) Cubic feet per second (cfs)—a water flow. A flow of one cfs continuously for a year amounts to 724 Af.

(3) Gallons per person (or capita) per day (gcd)—derived by dividing the total gallons used by a city in a year by 365 days and then by the population.

(4) Percentile flow—River flows are commonly expressed as percentile flows and are calculated from many years of stream gauging records. Percentile flows are based on the amount of time a given flow is exceeded. A 90 percentile flow is the amount of water that would normally be exceeded in the river during nine years of 10 or, in other words, a fairly low flow. To put it another way, only once in 10 years can the river be expected to be so low that it would have less than the 90 percentile flow. An 80 percentile flow would be that amount normally exceeded in the river eight of 10 years. So the *higher* the percentile number, the *lower* the actual flow of the river. An average year is approximately a 50 percentile flow.

CITY RESERVATIONS

Within the Yellowstone Basin are some 60 towns and cities. Only eight actually applied for reservations. Many are very small; many do not have central town water systems; many are on wells. For the latter, the reservation applications were not necessary. Board members were concerned about some towns such as Sidney and Hardin that did not apply; but the board could not consider them since they did not apply.

Of the eight reservations received, only Broadus is on wells. The rest depend on the river. Of those seven river cities, each applicant estimated the population it would have by the year 2000 or beyond, then estimated the gcd (gallons per person per day) and finally came up with an acre-feet per year (Afy) value. What the cities did not seem to understand is this: The final reservation is for the water needed to meet the *increase* of use and population—it is not for the total water to be used in that future year. Each reservation was finally determined in terms of total water needed in that future year minus the estimated present water use.

When the board analyzed the applications, some astonishing gcd values were revealed. For instance, Billings for year 2070 wanted 472 gcd; Big Timber for year 2000 wanted 1,334 gcd, and Miles City for year 2000 wanted 625 gcd. These figures were considered excessive, particularly since the average gcd for all cities in the Yellowstone Basin in 1970 was 212 gcd. In 1975, for Billings alone the figure was 210 gcd; for Yellowstone County cities and towns in 1970 it was 198 gcd and for Custer County towns in 1970, the figure was 210 gcd. After a great deal of discussion and calculating, the board adopted a standard of 250 gcd and applied it to all seven applicants.

For population estimates, the board relied on a number of careful studies and projections. For three applicants (Big Timber, Columbus, Laurel) population projections were accepted or only slightly modified. For Livingston, Miles City and Glendive, the population projections in the applications could not be supported, and considerable modification was made in each. Those six just mentioned applied for reservations to either year 2000 or year 2007.

With Billings, a different problem arose. Billings applied for the reservation for the year 2070, for a population of 600,000 people in the water service area. Growth studies, graphs and data tables all seemed to have an adequate basis up to the year 2000 and a little beyond. But then it seemed the projection from there to 2070 was made only by drawing the graph in an ever-steepening line. No one could or can prove that the Billings projection for 2070 is wrong or right—only time will tell. But board members believed the projection was on shaky ground and we compromised by taking, from the evidence Billings itself supplied, the population of 206,000 (at 235 gcd) for the year 2010. The board finally used a population of 206,000 at 250 gcd. The result was that Billings actually received a bit more than it asked for up to the year 2010.

These city reservations all have first priority in the basin. With that assurance, plus the reasonable final reservations, the board believes the cities are now in a water rights position to vigorously pursue planning for their expected growth.

IRRIGATION RESERVATIONS

Applicants for irrigation reservations included 14 conservation

F&G photo: Craig Sharpe

Trumpeter swan photo: Harry Engels

districts, two irrigation districts, the Department of State Lands (three applications), one from the Bureau of Land Management and one from the Bureau of Reclamation. The total of all the irrigation applications was for 1,176,559 Af of water, to irrigate 443,711 new acres. These applications were only for *new* irrigation and in no way affected, changed, covered or reduced present irrigation water rights

The basic problem in analyzing these reservations was in determining whether or not water was actually available either in the rivers or in planned storage dams. Of the 21 applications, 10 received as reservations the full quantity requested, or very nearly that amount. Three upstream applicants stated that parts of their applications depended on developing considerable storage, but the applicants further stated they had no plans to do so. For those, the board accepted at full value the parts of the request that did not depend on storage. One applicant asked for over 124,000 Af for a large number of small units, but then stated that only three of those were likely to be developed, based on economic, engineering and feasibility studies. The board accepted only those three.

One large application on the Bighorn was denied because the applicant stated that water for the Hardin Bench was already reserved in Yellowtail Reservoir And one application (the Huntley Irrigation District) requested 6.8 Af of water per acre—a figure about three times the average water usage per acre for all other full-service irrigation applications. This one was denied for a number of reasons.

The real problems came on the Tongue and Powder rivers. On the Tongue, after considerable study, the full-service requests were met by granting the Department of Natural Resources and Conservation its application for expansion of the storage capacity of the Tongue River Reservoir and stating the irrigation requests must be met by releasing water from the reservoir On the Powder, the difficulty was that there was no storage, and that the flows of the Powder are low and laden with dissolved salts. The 29-year average (or 50 percentile) flow of the Powder was about 300,000 Af, while the low flow was only about 32,000 Af Yet the irrigation requests on the Powder were for 24,300 Af for waterspreading and 166,896 Af for full-service irrigation, for a total of 191,196 Af. The board finally accepted all the waterspreading requests and denied all the full-service requests on the Powder River

For the 21 irrigation requests, most of the applicants came out very well, except the Hardin Bench and Huntley Irrigation District which were denied, the three up-river conservation districts which would need storage but had not planned on any and the full-service irrigation requests on the Powder River.

STORAGE REQUESTS

Storage requests included three proposed off-stream reservoirs as applied for by the Bureau of Reclamation and one request from the Department of Natural Resources and Conservation to considerably expand the storage capacity of the present Tongue River Reservoir. The board granted all four of these. The off-stream reservoirs were seen by the board as the only long-range hope for supplying water downstream during low-flow years in the future, if all the irrigation reservations are actually developed. The idea, as stated in the conditions the board wrote, is to pump water into those reservoirs in periods of high flow, so that it is available for later release. Since those three would be federal projects, there are many problems to be worked out, but at least the board did what it could to assure storage water rights.

As for the Tongue River Dam, the Department of Natural Resources and Conservation says the present dam is becoming unsafe. The price tag for making the present dam safe is only a little less than the price tag for redesigning and raising the dam to allow about 5½ times as much storage. The board believed this enlarged reservoir was the answer not only for supplying the irrigation requests on the Tongue and assuring flows for fish and wildlife, but also for having some water available for industrial sales.

IN-STREAM REQUESTS

There were 135 specific locations where in-stream requests were made—94 from the Department of Fish and Game, three

from the Department of Health and Environmental Sciences and 38 from the Bureau of Land Management The whole idea of in-stream reservations is quite new. The board fully agreed with the legitimacy and necessity of assuring that adequate water remains in the streams to maintain fish, wildlife, water quality and recreational values. The problem was in balancing those requests against the equally legitimate requests for diversion of the water by cities and irrigation applicants.

The board met this problem in two ways:

(1) For the Yellowstone system above Billings, the board believed the in-stream values were of major importance; below Billings, the in-stream values were not as critical. To express this in legal form, the board signed the final orders in this sequence to establish priority: (1) municipal reservations, (2) in-stream reservations above Billings, (3) all irrigation reservations, (4) in-stream reservations below Billings and (5) all storage reservations.

(2) The board assigned fairly generous in-stream reservations during the nonirrigation months and considerably lower in-stream reservations during May through September, particularly for the system above Billings.

As a result of these two actions, the board was able to meet the major requests for irrigation and at the same time meet, to a surprising degree, a major part of the in-stream requests. For instance, at Livingston the in-stream reservation is at 20 percentile flows for Oct 1-April 30, but only 95 percentile flows for May 1-Sept. 30. The 95 percentile in-stream flow means that in 95 years of 100, there will be *more* water than the in-stream flow value and no conflict with the irrigation reservations. So, even though in-stream water has priority over irrigation water near Livingston, a competitive situation would occur in only five of 100 years or, at worst, only 10 years in 100. Between Livingston and Billings, the competition may occur 15 or possibly 20 years in 100.

At Billings, an in-stream reservation of 75 percentile flows was granted. At Miles City and Sidney, the in-stream reservations granted were for about 80 percentile flows less the depletions up to those sites. In the lower reach of the river (below Billings), irrigation has a higher priority than in-stream concerns Even there, the competition would occur at worst in only two years of 10.

Obviously, there was duplication in the many in-stream requests. Recognizing this, the board assigned reservations for duplicate requests as a single value for a specific site. Thus, the reservation at Billings, Miles City and Sidney serves both the Department of Fish and Game and the Department of Health and Environmental Sciences; on many smaller streams, the Department of Fish and Game and the Bureau of Land Management reservations overlap.

While the in-stream reservation at Sidney protects the river values for Montanans, it has another very significant effect, to assure North Dakotans that at least 5.5 million Af will reach them. The often-heard cry of "use it or lose it" has been answered by the decision that in-stream water is now a "use," and yet this use does not deprive North Dakota of also being able to use the water that Montana has allocated for in-stream purposes. In addition, by making that much water available to downstream states, there is not much likelihood of the downstream water users eating into the unallocated and unreserved water still in the river in seven years of 10. If that presently unreserved water is filed on soon, it too would be protected.

THE WATER BUDGET

The object of this whole process is to find out what all these reservations do to the river. To get at this, the board first needed to know the status of the Yellowstone River before reservations An analysis of the current status of the river reveals that it is in quite good condition down to Miles City. But it also shows that between Miles City and Sidney there is very little increase in flow even in the average year, and in low flow years, there is actually less flow at Sidney than at Miles City now.

With those figures as a base and considering the reservation applications, the water budget was developed. For each major segment of the river, the depletion due to diversionary uses was subtracted from the present flows for each of the percentile years This gave an indication of what would be left in the river. Then the in-stream reservation was subtracted, and the difference represents the amount of water not now used and not reserved. This is the water to cover future filings.

Since most irrigation and city requests have been met through at least the year 2000, that unreserved water probably represents the water base for future industrial filings and for other small diversion filings. The problem, however, is that the unreserved quantity of water disappears in low flow years. It just isn't there. What this means for possible industrial users is that while a lot of water is available to them in average flow years or above average flow years, they would have to create their own off-stream storage to cover their needs in low flow years, or else they would have to hold firm purchase contracts for water to be supplied from the Bureau of Reclamation off-stream storage projects or from the Tongue River Reservoir

INDIAN WATER RIGHTS

The comment has been made that the board was wasting its time making reservations, because Indian water claims are not yet settled There are several facts which apply to that comment: (1) Indian reservations in the Yellowstone Basin involve only the Bighorn, Rosebud and Tongue rivers. (2) Because of this, the board's decisions on those rivers may well be in question and certainly if a large part of the Bighorn water is finally judged to be Indian water, then heavy diversions below the Bighorn would be affected. (3) The board was required to carry out the process and make final decisions by a certain time, and it did not have the option of waiting for the slow legal wheels to grind out the Indian water decision. (4) The decisions on water above the Bighorn are not involved in the Indian water claims. (5) The board's decisions were made to help put the long-range plans for uses of the Yellowstone into perspective.

Because the board made the decisions demanded of it by law does not mean the board was unaware of the potential impact the Indian water case might have. But the Indian water case was entirely outside the jurisdiction or influence of the board Consequently, the board proceeded to discharge its obligations under the law.

CONCLUSION

The job of assigning water reservations is done. Now the monkey is on the applicants' backs, for the law states that all reservations will be reviewed at least once every 10 years and may be modified by the board after that review In order to spur action on the part of the applicants, the board has directed each to report on progress within five years, with a few at three years This does not mean that an applicant must be charging ahead and expanding beyond its means. But it does mean that applicants cannot let the reservation documents gather dust on a shelf They must show significant progress in one or more areas such as planning, engineering or gathering more data than the sometimes sketchy data base of the application

The board has done its job to the best of its ability. Only the future will show whether it was a sound, statesmanlike job, and whether the people of Montana have risen to and sensibly answered the challenge of assuring that future generations of Montanans will have an adequate and healthy water base.

• *Details on water reservations granted by the Board of Natural Resources and Conservation are available from the Department of Natural Resources and Conservation, 32 S Ewing; Helena, MT 59601 Summary tables of water requests and amounts granted are available from Dr Wilson F Clark, Eastern Montana College; Billings, MT 59101* —Ed ■

A FREE-FLOWING YELLOWSTONE:

No Longer Just A Dream

by Jim Posewitz

In-stream water reservations granted the Department of Fish and Game by the Board of Natural Resources and Conservation will ensure the future of high-quality fishing in the Yellowstone (right, photo: Fred J. King) and protect the habitat of many wildlife species, including the red-tailed hawk (above, photo: Vince Claerhout) and mule deer (below, photo: Jon Cates). Once threatened by a dam, the blue ribbon portion of the upper Yellowstone (shown opposite, photo: Tony C. Caprio) will continue to flow free.

IT HAS ALL BEEN WRITTEN; it has all been said; it has all been argued, and now it has also finally been decided. To a large extent, for better or for worse, we have cast the die for the Yellowstone River's future. We don't know what legal challenges the future may hold, but the basic future of the river, of its wildlife and, to a degree, of its people, has been decided.

The river no longer lies totally vulnerable to unrestricted depletion. Now, for the first time, there is real hope that the Yellowstone will not follow every other major American river into dams, locks, dikes and conduits—things that would harness the river's freedom and drain its strength

To retrace the steps of the struggle for the Yellowstone is no easy task. Perhaps one cannot go back to the beginning of this gigantic struggle, to find the people who made it possible, the people who made it happen. Over the years, many men contributed to the river's cause. The first mark in the sand was probably the boot print of Joe Halterman, a biologist for the U S. Fish and Wildlife Service. Over 35 years ago, he recognized the special qualities of Montana rivers. His urging resulted in classification of streams bearing the now-familiar blue ribbon designation. The upper Yellowstone fell immediately into that category.

While classification offered no real protection, it provided status and recognition that persist to this day—recognition that influenced the decision to try to preserve a free-flowing river.

After this beginning, efforts to preserve Montana rivers consisted of implementing piecemeal, partially effective laws. In 1963, the Stream Preservation Act of Montana was passed, offering all streams and rivers some protection from physical habitat abuse That law extended protection only when those abusing the river were state agencies or subdivisions of state government

A more significant law was passed in 1969 allowing the Department of Fish and Game to file on in-stream water rights in sections of 12 Montana trout streams. Among those 12 streams was the blue ribbon section of the Yellowstone River. In the total picture of preserving the river, the protection these laws offered was inadequate.

When the 1970s dawned, the Yellowstone's situation became urgent The traditional depletion because of agricultural demands was superseded by a new, thirsty giant in Montana affairs—"King Coal." The nation had eased its way into energy overconsumption and created what we came to call the "energy crisis." The solution offered was coal—a commodity of stored energy found in Montana in virtual superabundance. The early 1970s saw many studies and plans to tap this immense energy resource. "King Coal" was to be our national savior; Montana, these studies proclaimed, could be our national boiler room.

Fear, concern and panic swept the ranks of Montana conservationists. The specter of a western Appalachia came immediately to mind These fears were fueled by documents such as the North Central Power Study, the Montana-Wyoming Aqueducts Study, the reality of Colstrip Nos. 1 and 2, the possibilities of Colstrip Nos. 3 and 4, the actuality of numerous industrial filings for water and the optioning of water in the Yellowstone Basin.

The North Central Power Study alone called for production of 69,000 megawatts of energy in Montana. The Montana-Wyoming Aqueducts Study called for diversion of 2.6 million acre-feet of water from the

Yellowstone River Basin into the Colstrip-Gillette oval of the Ft. Union coal fields.

Because of these proposals, conservationists and those involved in the recently conceived environmental movement became active in two specific areas: One group directed its attention toward the biology and ecology of the river; the other delved into the practical world of politics and legislation.

On the biological front, in 1972 the Montana Department of Fish and Game moved an ecological planning unit into the upper Yellowstone Basin. Three biologists began coordinated investigations into habitat requirements for fish, upland game birds and big game in the upper Yellowstone and Shields River drainage. In addition to meeting traditional information needs of the Department of Fish and Game, the group was preparing for the grim fight against damming the upper river.

Damming the upper river was viewed as a real possibility in 1972 because of increasing water demands and no real legal means to temper those demands. At best, this strategy of preparing to resist impoundment of the upper Yellowstone River was a token effort to preserve the free-flowing river system. It was aimed at traditional solutions to problems of depleted river systems. Within state law at that time, the strategy was helpless in addressing the cause of the problem—unlimited water diversions along the entire river.

On the political front, action was hotter, more exciting and indeed more profound. The environmental movement was in its infancy, and the incredible progress made in the early '70s would ultimately set the stage for water allocation of the Yellowstone.

The most significant legislation of the early '70s was the 1973 Montana Water Use Act, a complete overhaul of Montana water law. For the first time in the history of this state, those responsible for protecting fish and wildlife could legally compete for water allocations—agencies such as the Department of Fish and Game could request reservations of in-stream water to protect fish and wildlife habitat. It was no longer necessary to stick to the battle plan of 1972—to protect the river from a dam. Now it was possible to protect the river from depletion.

In other words, it was possible for those responsible for fish and wildlife to generate an offense, instead of continually defending the river by opposing other people's activities. The great difficulty in taking positive action, such as applying for a flow reservation, is that it requires substantially more effort than opposing or criticizing someone else's activities.

In 1974, another significant event occurred. The Montana Legislature, meeting annually, considered, debated and passed a three-year moratorium on major water allocations from the Yellowstone River system. While allowing for issuance of minor water permits (such as those needed by irrigators), it curtailed major water use permits—those typically required by industry.

The moratorium, effective in March 1974, was to last three years, until March 1977. Effects of the moratorium were significant. Among other things, it stimulated the public's interest and enabled the Department of Fish and Game to secure funds for extensive studies of the Yellowstone River ecosystem.

Biologists began several projects in 1974. Sponsored by Intake Water Co., department biologists initiated an investigation into the paddlefish population at Intake. The company also sponsored a study of the river's aquatic invertebrates and forage fish. The Bureau of Reclamation granted funds for a fisheries study of the Yellowstone River. The Environmental Protection Agency made funds available for study of Yellowstone tributary streams. Colorado Interstate Gas contributed funds for study of the Yellowstone's ecology. The Old West Regional Commission made a substantial grant to the state of Montana, and from that grant the Department of Fish and Game secured funds to study furbearers, waterfowl, recreation activities and the ecology of tributary streams. Panhandle Eastern Corp. also gave funds for a Yellowstone study.

In June 1975, the U.S. Fish and Wildlife Service sponsored a major investigation into the Yellowstone's fishery. Also in 1975, Utah International contracted with the department for a study on the ecology of the Powder River, a tributary it had interest in developing (See Bruce Rehwinkel's article, "Powder River: Historical Underdog," in the Jan. Feb. 1979 *Montana Outdoors*.)

These projects, along with existing Department of Fish and Game fisheries surveys and inventory efforts, provided the facts needed before approaching the Board of Natural Resources and Conservation with a reservation of flow application for the entire Yellowstone Basin. In all, 22 Fish and Game employees would testify on behalf of the river—people who gave time, talents and, in essence, a portion of their lives, to the understanding and protection of this river's natural systems.

On Nov. 1, 1976, Liter Spence, former water resources supervisor for the Department of Fish and Game, hand carried application 1781 to the Department of Natural Resources and Conservation a half hour before the filing deadline. The 300-page document, "Application for Reservation of Water in the Yellowstone River Basin," presented the position the Department of Fish and Game would assume and defend for the next two years. This application, including the entire mainstem Yellowstone River and 76 tributaries or sections of tributary streams, was destined to become the focus of the battle for preservation of the river. It was the largest application filed, and it rapidly became crucial.

Conducting necessary hearings and reaching a decision among the conflicting applications before the moratorium expired in March 1977 now seemed impossible. As a result, an extension on the moratorium was sought from the 1977 Montana Legislature, an action that added a new dimension to the struggle for the Yellowstone. The moratorium extension was introduced in the House of Representatives and passed rapidly and decisively. The House bill would have allowed the moratorium to continue for two more years.

In the Montana Senate, however, the attitude was different. The bill to extend the moratorium ran into serious trouble and, for a time, its outcome was in doubt. In addition to stalling the moratorium, SB 359 was introduced, a bill that would establish a preference system among water users. As originally drafted and passed by the Senate, the bill ranked certain water uses and

established a method where a user with a higher preference or rank could pre-empt rights of a user with a lower preference. Fish and wildlife were at the bottom of the list. The reservation Fish and Game was trying to secure for fish and wildlife would then mean nothing because any other water user could simply pre-empt it because of his higher preference. This bill was passed by the Senate and went to a House committee. While the House committee deliberated its fate, the moratorium bill was passed with only a one-year extension and provisions for the court to extend the moratorium should legal actions interrupt the process.

Meanwhile, SB 359 was hotly contested in the House committee. It was repeatedly amended and the final modification revealed the real purpose behind this legislation. If the bill were to pass, the legislature could review and overturn, with a two-thirds vote, the decision by the Board of Natural Resources and Conservation. The House turned down SB 359 by only four votes. Weighing the Yellowstone's future once again fell solely to the Board of Natural Resources and Conservation.

In August 1977, Department of Fish and Game witnesses took up quarters at Eastern Montana College in Billings to defend, under rigorous cross-examination, the department's application for water in the Yellowstone River and its tributaries. The hearings lasted for a month, were adjourned and then reconvened for another month in Helena. Most of that time was spent on the Department of Fish and Game's application. Ironically, the most hotly contested section was the Powder River. Although many degrading remarks have been made about the Powder, Fish and Game biologists defended it with as much vigor and dedication as any other portion of the application.

Following the hearings, all participants prepared findings of fact and conclusions of law. They were reviewed and comments were made by all parties involved. On Aug. 17 and 18, 1978, the Board of Natural Resources and Conservation heard final arguments from each party.

Nearing the finish of this long, complicated process, an appeal to the Supreme Court resulted in extensions of time for deliberation. The Montana Department of Fish and Game and the Montana Chapter of Trout Unlimited successfully appealed for time to correct the transcripts, allowing for proper review and comment. The court ordered further extensions to allow the Board of Natural Resources and Conservation time to make reasonable deliberations and sound judgments. The burden now was entirely borne by the board—seven citizens appointed by the governor confronting perhaps the most profound decision ever made by a lay board in the history of this state.

In early November, the board issued its tentative decisions on in-stream allocation. Members convened again in early December, making some major adjustments in the original allocation; the board's orders were then drafted by the hearings examiner. On Dec. 15, 1978, the orders were adopted. No matter what a person's bias or persuasion—for either protection of the river or the industrialization of eastern Montana—it is clear the board accepted and accomplished a monumental task and deserves the gratitude of every Montanan.

The orders adopted are complicated and difficult to summarize. The in-stream reservation will allow for preservation of a free-flowing river system, but it won't accomplish that preservation automatically. Much needs to be done, resources need to be committed and those who would protect the river need to be vigilant. The order provides that water will be allocated to in-stream uses on a monthly basis that closely resembles the natural flow of the river. More water is reserved for normal high water months of May and June than for late summer and winter when water is lower.

Putting it simply, a comparison is made between the amount of water granted annually and the average flow of a particular river or stream. The amount of water granted for in-stream reservations on the mainstem Yellowstone ranged from approximately 62% of the average annual flow at Sidney to over 76% in upstream areas. Water allocated to lower Yellowstone tributaries (the Tongue and Powder rivers) amounted to approximately 20% of the average annual flow, while more than 85% of the average flow of the Bighorn was committed to in-stream uses. Tributaries to the upper Yellowstone above Livingston were granted nearly the full complement of their average discharge.

While extremely important, discussion of flows and percentage of flows is not very exciting. When studying hydrographs, it is easy to lose track of the true value of the Yellowstone—its value to the people of Montana, to the wildlife communities of the river and to the spirit of the river itself. What we have done in our complicated way is decreed that the Yellowstone can still flow free.

If, as the years pass, this is the net effect of our effort on behalf of the river, then we can be proud of what we have done. For that boot print of Joe Halterman's, made on a Yellowstone River sand bar in the early 1940s, will not have disappeared. His dream—and the dreams of many dedicated conservationists—will have been realized. Because, now the seasons of 1979 are special as they pass along the Yellowstone.

The calling of the paired Canada geese, searching for a proper nesting site through the frosty dawn of March, now carries a special tone. The attentive listener will hear not only the promise of a successful nest this year, but also for an enduring future for geese along the river.

The high water of June will first thunder and roar its foamy announcement through Yankee Jim Canyon; later, its still mighty force will silently call the paddlefish to their lower river spawning grounds. This process no longer needs to number its days.

The low flows of late summer will slide and riffle confidently downstream, since there is now a limit to what can be asked of the river in this season.

In the fall, cottonwood leaves will turn gold and flutter to the surface of the river. As always, they will bob over riffles, turn lazily through the backwaters and tumble over rapids. Their journey will carry them past beavers storing willow for winter, white-tailed deer tucked securely in brushy hideaways, great flocks of migrating ducks and geese cautiously resting on sand bars and gravelly, wind-swept islands.

So it has always been for countless seasons along the mighty, free-flowing Yellowstone. And now, perhaps it can always be so. ■

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